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Foreword

The material contained in the Nuclear Medicine Design Guide is the culmination of a partnering effort by the Department of Veterans Affairs Veterans Health Administration and the Facilities Quality Office. The goal of the Design Guide is to ensure the quality of VA facilities while controlling construction and operating costs.

This document is intended to be used as a guide and as a supplement to current technical manuals and other VA criteria in the planning of Nuclear Medicine. **The Design Guide is not to be used as a standard design, and the use of this Design Guide does not limit the project Architect's and Engineer's responsibilities to develop a complete and accurate project design that best meets the user's needs and the applicable code requirements.**

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Introduction

The Nuclear Medicine Design Guide was developed as a tool to assist Contracting Officers, Medical Center Staff, and Architects and Planners with the design and construction of Nuclear Medicine facilities. It is not intended to be project specific; but rather provide an overview with respect to the design and construction of Nuclear Medicine facilities.

Guide plates for various rooms within Nuclear Medicine are included in this chapter to illustrate typical VA furniture, equipment, and personnel space needs. They are not project specific as it is not possible to foresee future requirements. The project specific space program is the basis of design for an individual project. It is important to note that the guide plates are intended as a generic graphic representation only.

Equipment manufacturers should be consulted for actual dimensions, utilities, shielding, and other requirements as they relate to specified equipment. Use of this design guide does not supersede the project architects' and engineers' responsibilities to develop a complete and accurate design that meets the user's needs and complies with appropriate code requirements.

Definitions

Diagnostic Room: Designated room containing diagnostic equipment performing patient procedures such as Nuclear Medicine, Bone Densitometry, PET/CT. It may also be referred to as Scanning Room, Procedure Room, or Gantry Room.

“Hot”: A colloquial term used to describe the presence of measurable radioactivity. In addition to the nature of the radioactive material itself, the distance from the radioisotope and the time of exposure are important safety considerations. To keep exposure “as low as reasonably achievable” (ALARA), special waiting / holding areas, toilets and other support spaces may be designed for patients who have received a radioactive substance, depending upon factors including the specific radiopharmaceutical used.

“Hot Lab” / Radiopharmacy: Area for storage, preparation and dispensing of radiopharmaceuticals. It must be secured and provided with adequate shielding. The amount of shielding is determined by a health physicist or radiation safety officer (RSO), depending upon the anticipated usage of specific radioisotopes.

Nuclear Imaging: Method of producing images using gamma or scintillation cameras that detect radiation from different parts of a patient’s body after administration of a radioactive tracer material. Since physiologic / pathophysiologic processes are being monitored / measured, the patient must remain under the gamma camera for periods of time that vary from 20 to 90 minutes and may return for delayed images later in the same day or several days later. Modalities include Planar and Single Photon Emission Computed Tomography (SPECT) imaging, Positron Emission Tomography (PET), Fusion Imaging and Coincidence Detection imaging.

Patient Dose Administration: The process of metabolizing delivered radiopharmaceutical agents in order to image the targeted metabolic function. Patient Dose Administration may require minutes, or even hours, before the imaging process can accurately capture the desired results. Patient Dose Administration periods will be dependent upon the radiopharmaceutical utilized and the metabolic rate of the tissues / organs targeted.

Picture Archiving and Communication System (PACS): The digital capture, transfer and storage of diagnostic images. A PACS system consists of workstations for interpretation, image/data producing modalities, a web server for distribution, printers for file records, image servers for information transfer and holding, and an archive of off-line information. A computer network is needed to support each of these devices.

Positron Emission Tomography (PET): Positron Emission Tomography, also called PET imaging or a PET scan, is a diagnostic examination that involves the acquisition of physiologic images based on the annihilation radiation of positron-emitting radioisotopes administered to patients. Positrons are tiny particles emitted from a radioactive substance administered to the patient. The subsequent images of the human body developed with this technique are used to evaluate a variety of diseases.

PET/CT (Combined) Imaging: In one examination, a PET/CT scanner combines two state of the art imaging modalities and merges PET and CT images together. By monitoring the body’s metabolism, PET provides information of cell activity whether a growth within the body is cancerous or not. CT simultaneously provides detailed anatomic information about the location, size, and shape of various lesions and tissue.

Radiobioassay: This process utilizes specimens such as blood, urine, feces, spinal fluid, biopsies, etc., that are received and /or collected from patients, evaluated, and measured. Radioactive materials are incorporated in vivo or in vitro and determinations of body functions made. Specimen receiving, holding, preparation, examination, interpretation, consultation, record distribution, storage and retrieval occur in areas separate from the clinical imaging function.

Radiopharmaceutical: Radiopharmaceutical: Term to describe radioactive agents administered to a patient. Different agents have an affinity for the varying physiologic processes of the body. These radioactive substances employed for diagnostic testing / imaging typically have very low doses of radioactivity, enabling patients to be treated on an outpatient basis with minimal restrictions following the exam.

Scintillation or Gamma Camera: Nuclear imaging camera consisting of a collection crystal (head) and magnifiers that create images of a target physiologic process from the radiation being emitted from a patient following the administration of a radioactive uptake material.

Single Photon Emission Computed Tomography (SPECT): Diagnostic imaging modality that usually employs a rotating collection crystal (head) and magnifiers to create three dimensional images of the distribution of single photon emissions from the body. The images of the varying dimensional relationships are computer generated resulting in improved resolution of target organs / processes.

Abbreviations

A	Amps
AC	Air Conditioning
ABA	Architectural Barriers Act
AC/HR	Air Changes per Hour
ADA	Americans with Disability Act
ADAAG	ADA Accessibility Guidelines
A/E	Architectural / Engineering Firm
AHJ	Authority Having Jurisdiction
AIA	American Institute of Architects
ANSI	American National Standards Institute
AR	As Required
ASRAE	American Society of Heating Refrigerating & Air-Conditioning Engineers
BGSF	Building Gross Square Feet
BTU	British Thermal Unit
CARES	Capital Asset Realignment for Enhanced Services
CFM	Cubic Feet per Minute
DOE	Department of Energy
DGSF	Departmental Gross Square Feet
DVA	Department of Veterans Affairs
FAR	Floor Area Ratio
FC	Foot Candle
OCFM	Office of Construction & Facilities Management
GSF	Gross Square Feet
GSM	Gross Square Meters
HIPAA	Healthcare Insurance Portability and Accountability Act
HP	Horsepower
HVAC	Heating, Ventilating and Air Conditioning
IAQ	Indoor Air Quality
IBC	International Building Code
JCAHO	Joint Commission (on Accreditation of Healthcare Organizations)
LB	Pound, Pounds
LUX	Lumen Per Square Meter
NEC	National Electrical Code
NFPA	National Fire Protection Association
NHCU	Nursing Home Care Unit

NSF	Net Square Feet
NSM	Net Square Meters
NTS	Not to Scale
NUSIG	National Uniform Seismic Installation Guidelines
OSHA	Occupational Safety and Health Administration
RCP	Reflected Ceiling Plan
RH	Relative Humidity
SF	Square Feet, Square Foot
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
SqM	Square Meters
TIL	Technical Information Library
TV	Television
UBC	Uniform Building Code
UFAS	Uniform Federal Accessibility Standards
V	Volts
VA	Department of Veterans Affairs
VACO	Veterans Affairs Central Office
VAFM	Veterans Affairs Facilities Management
VAMC	Veterans Affairs Medical Center
VHA	Veterans Health Administration
VISN	Veterans Integrated Service Network




































LOGISTICAL CATEGORIES (LOG CATS)




















VV: Department of Veterans Affairs furnished and installed - Medical Care Appropriations

VC: Department of Veterans Affairs furnished and Contractor installed - Medical Care Appropriations for Equipment and Construction Appropriations for Installation

CC: Contractor Furnished and Installed - Construction Appropriations

CF: Construction Appropriations - Department of Veterans Affairs furnished - Installed by the Department of Veterans Affairs or Contractor

	DUPLEX RECEPTACLE, NEMA 5-20R - 20AMP- MOUNTED 450MM (18")AFF UNLESS OTHERWISE NOTED.		WALL MOUNTED TELEPHONE OUTLET-MOUNTED 1200MM (48") AFF UNLESS OTHERWISE NOTED
	DUPLEX RECEPTACLE, NEMA 5-20R - 20AMP- MOUNTED ABOVE COUNTER TOP		COMPUTER TERMINAL OUTLET - VERIFY EXACT NEEDS-PROVIDE SIGNAL AND POWER OUTLET AS REQUIRED
	DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER, NEMA 5-20R - 20 AMP - MOUNTED 450MM (18")AFF UNLESS OTHERWISE NOTED		SPEAKER-CEILING MOUNTED
	DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER, NEMA 5-20R - 20 AMP - MOUNTED ABOVE COUNTER TOP		INTERCOM OUTLET
	WEATHERPROOF DUPLEX RECEPTACLE WITH GFI, NEMA 5-20R - 20 AMP - MOUNTED ABOVE 450MM (18") AFF UNLESS OTHERWISE NOTED		NURSE CALL DOME LIGHT-CEILING MOUNTED
	WEATHERPROOF DUPLEX RECEPTACLE WITH GFI, NEMA 5-20R - 20 AMP - MOUNTED ABOVE 450MM (18") AFF UNLESS OTHERWISE NOTED		NURSE CALL DOME LIGHT-WALL MOUNTED
	QUADRAPLEX OUTLET, NEMA 5-20R - 20 AMP - MOUNTED ABOVE 450MM (18") AFF OR QUADRAPLEX OUTLET, NEMA 5-20R - 20 AMP - PEDESTAL-MOUNTED.		NURSE CALL DUTY STATION
	QUADRAPLEX OUTLET, NEMA 5-20R - 20 AMP - MOUNTED ABOVE COUNTER TOP		EMERGENCY NURSE CALL
	QUADRAPLEX OUTLET WITH GROUND FAULT INTERRUPTER, NEMA 5-20R - 20AMP - MOUNTED 450MM (18") AFF UNLESS OTHERWISE NOTED		NURSE CALL STAFF STATION
	QUADRAPLEX OUTLET WITH GROUND FAULT INTERRUPTER, NEMA 5-20R - 20AMP - MOUNTED ABOVE COUNTER TOP		VOLUME CONTROL-WALL MOUNTED
	DUPLEX RECEPTACLE, NEMA 5-20R - 20AMP - EMERGENCY POWER-MOUNTED 450MM (18")AFF UNLESS OTHERWISE NOTED		JUNCTION BOX-PURPOSE AND LOCATION AS NOTED
	SPECIAL RECEPTACLE		SUPPLY AIR DIFFUSER
	TELEVISION OUTLET		EXHAUST OR RETURN AIR REGISTER OR GRILLE
	TELEPHONE OUTLET-MOUNTED 450MM (18") AFF UNLESS OTHERWISE NOTED		EMERGENCY EXHAUST GRILLE
			THERMOSTAT
			HUMIDISTAT
			COMBINATION FAUCET HOSE BIBB
			VACUUM
			MEDICAL AIR
			OXYGEN
			ELECTRICAL STRIP MOLD - NEMA 5-20R RECEPTACLES AT 600MM (2'-0") INTERVALS

	SINGLE POLE SWITCH		WALL-MOUNTED FLUORESCENT FIXTURE
	SINGLE POLE SWITCH – SUFFIX OF a,b OR c INDICATES SEPARATE CONTROL OR FIXTURES WITH SAME DESIGNATION		2'x2' FLUORESCENT FIXTURE-EMERGENCY POWER
	DIMMER SWITCH		2'x4' FLUORESCENT FIXTURE-EMERGENCY POWER
	THREE WAY SWITCH		WALL MOUNTED FLUORESCENT FIXTURE-EMERGENCY POWER
	DOOR SWITCH		WALL MOUNTED LIGHT FIXTURE-TYPE AS NOTED
	FUSED OR UNFUSED DISCONNECT SWITCH		LIGHT FIXTURE-TYPE AS NOTED
	EMERGENCY POWER OFF (EPO) PUSH BUTTON		LIGHT FIXTURE-TYPE AS NOTED EMERGENCY POWER
	2'x2' FLUORESCENT FIXTURE		CIRCUIT BREAKER
	1'x4' FLUORESCENT FIXTURE		BATTERY POWERED CLOCK
	2'x4' FLUORESCENT FIXTURE		

**Section 2: Narrative**

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General Considerations

Overview

What is Nuclear Medicine?

Nuclear Medicine is a specialized area of imaging that uses very small amounts of radioactive substances to examine organ function and structure. It utilizes the nuclear properties of radioactive and stable nuclides to perform diagnostic evaluations and to provide therapy. The key benefit of Nuclear Medicine is the ability to identify metabolic functions.

Radioactive isotopes are administered either orally, by inhalation, intravenously, or in selected instances by direct injection to obtain diagnostic evaluations of anatomic and / or physiologic or path physiologic conditions. These evaluations require a wide range of services encompassing patient consultation and examination, interpretation of images, correlation with other diagnostic methods, determination of metabolic functions, drug levels and body constituents, imaging / computerization and recommendations of the significance of the findings.

Energies utilized in Nuclear Medicine are a form of ionizing radiation that does have known health risks. However, the level of exposure, when appropriately prescribed, does not present significant health risks.

Current Trends

Nuclear medicine is composed of several functional units such as Nuclear Clinical Imaging and Radiobioassay, known as bench work or, formerly, Radioimmunoassay. The process is particularly useful for obtaining quantitative functional information on organs, such as the kidney, heart, brain, and thyroid, systems such as urinary and gastrointestinal tract, and processes such as infection, impaired circulation, and malignancies. Nuclear Medicine is the preferred method of cancer diagnosis and monitoring of oncologic therapies.

Picture Archiving and Communication System (PACS) has become the VA standard for the captive transfer and storage of diagnostic images. This system consists of workstations for image interpretation, a web server for distribution, printers for film records, image servers for information transfer and holding, and an archive for off-line information. A high –end monitor system should be provided in areas where physician viewing and diagnosis occur, either within nuclear medicine or remotely.

Although some VA facilities still employ conventional film technology, total conversion to PACS is anticipated and reflected in this Design Guide.

Future Trends

The expansion of telecommunication nuclear networks with tertiary missions will result in the affiliate sites being located in smaller inpatient and ambulatory care facilities that are close to the patient's residence. Technologies are in development to expand the range of metabolic functions that are able to be identified and will vastly improve patient outcomes. As technology advances, it is important that our imaging facilities be designed to accept whatever

changes in equipment and treatment is developed. At the same time, the needs of the patient must not get lost in all this change. It is critical to provide an environment that not only addresses the requirements of technology but also the needs of the patient.

Functional Considerations

Operations

Nuclear Medicine is a referral-based diagnostic service. In addition to diagnostic nuclear imaging procedures, other services performed in this area may include Radiobioassay, Specimen Analysis, and Cardiac Stress Testing. Support functions for these services may be shared between Nuclear Medicine/Cardiology and Radiation Therapy Services.

Imaging Process

The patient is referred to Nuclear Medicine.

Upon arrival, the patient is received, their records are verified, and the patient is directed to either outpatient or inpatient waiting.

Prior to imaging, patients may go to the Radiopharmacy / Injection area, or dedicated Patient Dose Administration Room, where dose administration is performed.

Depending upon the examination prescribed, the patient may access a separate waiting area designed to accommodate dosed patients.

The patient now proceeds to the procedure areas where the examination is administered.

Electronic and / or video images are viewed and enhanced at imaging consoles within the procedure rooms or within the adjoining control room to ensure the quality of the images.

The Nuclear Medicine physician receives the images for interpretation.

Image records are stored electronically and available for retrieval for consultation and follow up exam comparisons. This may be accomplished both in central viewing areas and remotely.

Radiobioassay Process

Referring physicians send work orders to the diagnostic lab.

Specimens are received and / or collected.

Specimens are processed, examined, and results are reported to the referring physician.

Patient Care Concept

Providing convenient access to healthcare in a non-institutional, non-threatening environment is an objective of the Nuclear Medicine Service. Patient education and family consultation may be used to further reduce the stress sometimes associated with NM Procedures.

Patient Base

VA Nuclear Medicine facilities are focused upon serving the Veteran and may include sharing agreements, joint ventures, and referrals. The aging veteran patient population with comorbidities and increased severity of illness necessitate design features that emphasize safety and prevention of risks.

Medical Records

Diagnostic evaluations generated within the department become part of the Veteran's Consolidated Health Record. Evaluations are communicated to the ordering physician in electronic form. Image manipulation, interpretation, archiving, retrieval, and distribution procedures may occur within the Nuclear Medicine Service or remotely.

Special Requirements

Teaching facilities may require more technical support space to accommodate small groups that are participating in consultation, interpretation, and image manipulation.

Currently, most VA facilities contract with outside vendors to provide the radioactive isotopes required for Nuclear Medicine examinations. However, a larger facility may be able to justify the need to produce these isotopes "in house". In this case, a Cyclotron will be required to be provided within the facility. It should be located near the Radiopharmacy.

Space Planning Issues

Flexibility

All procedure and computer support areas should be planned with flexibility to accommodate the rapid technological improvements occurring in this field. When possible, all areas should be on one floor and contiguous.

Infrastructure support areas (e.g., electrical and telecommunications rooms) should be located in proximity to the Nuclear Medicine Suite.

Efficiency

Shared support and qualified technical staff cross-training and coordination are possible if Nuclear Medicine and other allied services are adjacent. Shared patient and staff support may include staff lockers, lounges, patient waiting, inpatient holding and registration. Segregated patient post-dosing areas may be required for radioisotope therapy and PET/CT patient waiting areas.

Location of PET/CT equipment should be coordinated between Nuclear Medicine and Radiology Services.

Human Factors

The VA is committed to providing a healthcare facility that includes components that create a healing environment. It is important that the design of Nuclear Medicine reinforces this concept. Patient's vulnerability to stress from noise, lack of privacy, poor lighting, and other causes, and the harmful effects it can have on the healing process is well known and documented. Large-sized unfamiliar equipment and negative public perception of nuclear issues are additional causes of patient stress. Patient dignity and self-determination should be accommodated while considering operational efficiencies. De-emphasizing the institutional image of traditional health care facilities and surrounding the patient and family members with architectural finishes and furnishings that are familiar and non-threatening should be a prime objective. It is important to remember, however, that this is a healthcare environment and ease of maintenance, durability, and sanitation should be primary considerations when selecting materials and finishes.

Due to the length of time a patient is relatively motionless for some Nuclear Medicine preparations and exams, it is helpful to provide the patient diversions to minimize the perceived length of time. One way to accomplish this is to provide a television within the patient's field of view. This can be connected to a system to provide selected patient education such as a DVD player.

Planning, design, and detail consideration should address security issues. The application of ABA and ADA design standards for space and fixed equipment locations satisfy accessibility requirements.

An inherent opportunity exists in the design of Nuclear Medicine to address these issues and put forth creative solutions that enhance patient comfort and contribute to positive outcomes.

Technical and Environmental

Telecommunications networks provide the opportunity for the patient imaging to occur in one location, while the physician interpretation occurs in another location. The design of Nuclear Medicine facilities should consider the separation of non-radioactive areas from radioactive sensitive areas. Such consideration can reduce or eliminate the need for excess radiation protection. Such segregation also ensures the integrity of radiation-sensitive imaging and quantitative techniques in both the nuclear imaging and lab settings. A physicist should be engaged to determine if and what level of radiation protection is required.

Dosed patients awaiting procedures may require dedicated "hot" waiting / uptake rooms and toilet facilities in order to protect other individuals from unnecessary exposure to low and short-lived levels of radiation. This is required for PET procedures that utilize higher energy radiopharmaceuticals. Dedicated "hot" areas may not be required for other nuclear medicine procedures that utilize lower energy isotopes.

Organizational Concepts

The reception area controls access to the patient areas and areas where radionuclides are stored or used. Signage is required by law to identify areas where radioactive products are used.

Patient areas are consolidated to control patient access and to maintain patient privacy, security, and dignity.

Staff support areas which deal with image manipulation and quality control are consolidated into a core area to ensure image quality, staff efficacy, and patient record security and privacy.

Clinical administrative areas addressing referral, reading interpretation and consultation functions are accessible to physicians. Consultation and interpretation areas are not accessible to patients and should be private staff work areas.

Patient and Staff circulation should be separated. Staff functions may be located within the service or in a convenient location that is shared with another service.

In-vitro specimens received from outside the department require access to lab by cart or hand delivery. Box conveyors and pneumatic tube systems can not be justified by volume and may affect the quality of the specimen. In-vitro specimen traffic should not mix with outpatient traffic. Provide space within the department if blood drawing and / or biopsies are performed.

Locate clean and soiled utility functions close to the patient areas they support. Ancillary support staff (housekeeping, janitorial, maintenance, engineering, etc...) standard procedures may require modification in response to nuclear safety and security concerns, such as restricted access and decay verification.

Staff Utilization and Cross-Training

The nuclear physics aspect of Nuclear Medicine requires specialized staffing. Endocrinology and Cardiology diagnostic services utilize nuclear techniques and may benefit from joint activities with Nuclear Medicine. Other departments, such as the Radiology Service use digital image technology. The stress testing activities of Nuclear Medicine, Cardiology, and Ultrasound may be consolidated if patient safety and / or test results are not compromised.

Patient Access / Way-finding

Minimize travel distance from parking and main patient entrance to Nuclear Medicine Service waiting. Location with other diagnostic facilities assists in Way-finding and coordination of patient services. Provide separate inpatient access.

Functional Adjacencies

Nuclear Medicine should be located as follows:

Close and on the same floor:

- Radiology Service
- Laboratory Service

Close / different floor acceptable:

- Ambulatory Care
- Nursing Service – CCU
- Nursing Units – ICU
- Nursing Units – MS&N

Nursing Units – Respiratory

Separation Desirable:

Audiology and Speech Pathology
Canteen / Dining
Dietetic Service
Rehabilitation Medicine

Services Access

Nuclear Medicine gamma camera installations and replacements usually do not require special construction other than for load considerations and level flooring. Floor trenches for electrical cabling are frequently not required. Positron Emission Tomography (PET) requires special dedicated facilities that may have special requirements including load considerations, shielding and ventilation. PET/CT also requires special dedicated facilities that may include structural reinforcing, floor leveling, shielding and space for additional support equipment.

Technical Considerations

General

Seismic

Where required, install all components and equipment with seismic provisions as outlined in the various discipline specific VA Design manuals for healthcare projects. Refer to VA Construction Standard Handbook PG-18-03 (CD-54), “Natural Disaster Resistant Design Non-structural” for additional information.

Mycobacterium Tuberculosis

Current Center for Disease Control (CDC) requirements for design of public areas within the building to accommodate Mycobacterium Tuberculosis patients must be addressed by architectural and mechanical disciplines. Check current requirements with the VA task force on transmission of Mycobacterium Tuberculosis, TB criteria in HVAC Design Manual for Hospital Projects, and the CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings, 2005.

Sustainability

In 2006, the Department of Veterans Affairs joined other Federal agencies who are participating in principles outlined in the Memorandum of Understanding for the Federal Leadership in High Performance and Sustainable Buildings. The purpose of these guidelines is to encourage the use of life cycle concepts, consensus-based standards, and performance measurement and verification methods that utilize good science and lead to sustainable buildings. The goals of the members of this initiative are to establish and follow a common set of sustainable Guiding Principles for integrated design, energy performance, water conservation, indoor environmental quality, and materials aimed at helping Federal agencies and organizations:

- Reduce the total ownership cost of facilities.
- Improve energy efficiency and water conservation
- Provide safe, healthy, and productive built environments
- Promote sustainable environmental stewardship

These principles should be addressed in the design of all VA facilities.

Architectural

Interior Materials and Finishes

Partitions

Interior partitions should be primarily painted gypsum wallboard on metal studs. Partitions enclosing physician offices, exam rooms, and treatment rooms should be provided with sound attenuation batts between the studs in accordance with H-18-03, VA construction standard CD 34-1, Noise Transmission Control.

Partitions, windows and doors enclosing Nuclear Medicine rooms that require radiation shielding must have the shielding engineered by an appropriately certified Health Physicist. Refer to H-18-03 VA Construction Standard 64-1, X-Ray Radiation shielding and Special Control Room Requirements. Construction documents will require written certification by a registered Health Physicist.

Floors

Floors in offices, conference rooms and waiting areas should be carpet with a 4 inch high resilient base. Floors in toilet rooms should be ceramic tile with a ceramic tile base. Floors in Imaging Units, Radiobioassay Units, and Radiopharmacy should have welded seam sheet flooring with an integral base. Floors in exam rooms and most other spaces should be vinyl composition tile with a 4-inch high resilient base. Treatment rooms and other spaces where higher doses of radiation or longer lived isotopes will be administered should be of welded seam sheet construction.

Floor assemblies enclosing Nuclear Medicine rooms that require radiation shielding must have the shielding engineered by an appropriately certified Health Physicist. Refer to H-18-03 VA Construction Standard 64-1, X-Ray Radiation shielding and Special Control Room Requirements. Construction documents will require written certification by a registered Health Physicist.

Ceilings

Ceilings should be primarily lay-in acoustic ceiling tile. Certain areas, such as procedure rooms and treatment rooms, should have lay-in acoustic ceiling tile with a washable sprayed plastic finish. Coordinate the ceiling height requirements with the equipment manufacturer. Pathways above ceilings for cable assemblies should be provided for specific equipment types.

Ceiling assemblies enclosing Nuclear Medicine rooms that require radiation shielding must have the shielding engineered by an appropriately certified Health Physicist. Refer to H-18-03 VA Construction Standard 64-1, X-Ray Radiation shielding and Special Control Room Requirements. Construction documents will require written certification by a registered Health Physicist.

Wall Protection

Wall and corner guards should be used in corridors and all other areas where damage from cart and stretcher traffic is anticipated.

Interior Doors and Hardware

Interior doors should be 1 ¾ inch thick solid core flush panel wood doors or hollow metal doors in hollow metal frames. Doorjambs, except in rooms with radiation shielding, should have hospital type sanitary stops that stop 8 inches from the floor to facilitate mopping. Doors in wall assemblies that require shielding must be rated to provide the same shielding level as that in adjacent partitions. Hollow metal doors should be used where high impact is a concern and where fire rated doors are required. Kick / mop plates should generally be applied to both sides of the doors. Handicapped accessible hardware should be used throughout.

Refer to VA Handbook PG-18-14, Room Finishes, Door and Hardware Schedule, for additional information.

Doors leading to radionuclide receiving and storage area and radiopharmacy are required to be steel security doors that may in some areas need to have proper lead shielding. Refer to VA Handbook PG-18-14, Room Finishes, Door and Hardware Schedule, for additional information.

Structural

General

The size, weight and support requirements for Nuclear Medicine equipment vary greatly. Manufacturer data sheets should be obtained for each type of equipment under consideration. Configure framing systems to accommodate support and serviceability requirements established by the manufacturer.

Shielding

Radiation shielding is often necessary to protect adjacent occupancies. Give proper consideration to the weight of shielded partitions, doors, ceilings and floors. In some instances, structural building materials may provide adequate levels of radiation shielding in specific directions and may not require additional layers of supplemental shielding. Floor depressions and / or door jamb reinforcement are sometimes necessary.

Floor Trenching

Identify areas where floor trenching and /or floor penetrations are required to receive equipment infrastructure.

Equipment

Casework

Casework may be millwork or modular. Casework systems should be chosen that provide flexibility for planning and utilization purposes. Casework systems should incorporate components dimensioned for ease of multiple re-use installation applications. Casework systems should provide for cable management and ergonomic placement of workstations and flat screen monitors. Casework used for the storage of radiopharmaceuticals must be shielded. The shielding must be engineered by an appropriately certified Health Physicist.

Information Management Systems

Information Management Systems shall include elements of image retrieval, processing, storage, treatment planning, electronic patient records including patient registration, patient charges, physician order entry, and patient / staff movement. Additional shielding may be required. These systems elements will require access to the main facility information system as well as the departmental local area network. A standardized structured cable system and pathway system are provided to facilitate current and future network access. All components should be planned for compatibility.

Picture Archiving and Communications Systems

It is the goal of the VA to implement Picture Archiving and Communications Systems (PACS) in all VA healthcare facilities. As this conversion to PACS is implemented, some existing facilities are currently utilizing conventional film processing. It is anticipated that any significant renovation will include conversion to PACS as a basis for design.

HVAC

General

When HVAC services must penetrate a shielded enclosure, coordination is required between HVAC design and the health physicist certifying the construction documents.

Operation

Air conditioning systems should be provided to heat, cool and ventilate the individual spaces, as required to satisfy the VA design criteria.

Provide a dedicated computer type AC unit to cool the PET/CT System Component Room. Verify the AC requirements with equipment supplier.

Humidification/dehumidification may be required for the PET/CT Scanner Room and/or the PET/CT System Component Room to keep the PET/CT equipment and electronics within the PET/CT vendor tolerances.

Generally, lead lining in walls terminates at or below ceiling level. However, in special instances where lead linings extend higher and ducts penetrate the lining, refer to Lead Shielded Duct Requirements in the VA HVAC Design Manual.

Capacities

The number of people and the air conditioning load noted on the room design standard sheet is for the purpose of establishing the basis of design guide and its use in planning. Verify the actual number of people and the air conditioning load to agree with the project requirements.

Verify equipment AC loads based on the actual equipment furnished on the project.

Air Quality and Distribution

All examination and Equipment rooms not required to be under negative pressure shall have positive air pressure with respect to the adjoining areas. This is to help maintain a reduced dust environment with respect to the electronic equipment.

The transferred air should be no more than 150 cfm (71.0 Liters/second) per undercut door.

Care should be taken to position supply air diffusers so as not to create a draft on patients or on operators.

Mycobacterium Tuberculosis

Refer to General Comments

Seismic

Refer to General Comments

Exhaust System

If any fume hoods are provided, a dedicated exhaust system should be provided for each fume hood. Locate the supply air diffusers as far away from the hood sash opening as possible; and size to eliminate draft conditions and provide proper air flow at the hood.

Noise Level

Select HVAC equipment, ductwork and air distribution devices to achieve noise levels listed in the VA HVAC Design Manual for Hospital Projects and the Master Construction Specification.

Plumbing

Water and Waste Systems

The plumbing systems should be provided to satisfy the departmental plumbing needs.

The department's domestic cold water should be piped to all plumbing fixtures and equipment requiring this utility. A hot water return system should be provided to ensure the design temperature at the farthest outlet.

The department's plumbing fixtures and drains should be drained by gravity through soil, waste, and vent stacks. In addition, the department's special waste should be drained through corrosion-resistant, flame retardant piping into either a local or centralized acid dilution tank.

Plumbing fixtures and equipment shall comply with the Architectural Barriers Act (ABA).

Emergency eyewashes shall comply with ANSI Z-358.1.

Medical Gas Systems

The department's medical gas outlets are shown to establish a base for the design guide and its use in planning. The engineers/designers shall verify the medical gas location and quantities for individual projects.

Electrical

Illumination

Illumination is typically provided utilizing recessed fluorescent luminaries with acrylic prismatic lenses. The fixtures typically use F32T8 lamps in compliance with the National Energy Policy Act of 1992, with subsequent revisions in 1998 and 2005. Lamps have a minimum color rendering index (CRI) of 85 and a color temperature of 4100 degrees Kelvin (K), which is close to the "cool white" color temperature of 4150 degrees K. Lighting intensities conform to the VA design criteria, the IES Lighting Handbook, and ANSI/IESNA RP-29-06, the recommended practice: Lighting for Hospitals and Healthcare Facilities.

Lighting is typically controlled by wall mounted switches located at the entrance to the room. Dimmer switches are utilized for variable lighting levels in control and exam areas. Larger spaces may utilize multiple switching by separate switches for lighting of individual zones or areas. Viewing Rooms will typically have indirect lighting systems for visual comfort, reduced glare, reading accuracy, and critical determinations. Dimmer switches are utilized for the variable illumination level.

For Nuclear Medicine rooms, fixed or mobile procedure lighting may also be required. Lighting fixtures utilized in rooms which require special shielding should have proper shielding provisions per the specific radiation shielding requirements.

Power load densities for lighting are listed by use for the mechanical HVAC load calculation purposes. Load densities should be verified for the actual design, as they may vary depending on the room configuration, fixture types, lamps and ballasts used.

Power

Nuclear Medicine power requirements have to be specifically coordinated with the equipment manufacturer. Separate power feeds may be required for Nuclear Medicine computer equipment, power conditioners, and air conditioning systems. General purpose duplex receptacles are typically provided on each wall of a room or space. Workstations with personal computers (PC's) are typically provided with quadraplex receptacles for the PC, monitor, printer, or PACS workstations.

Each Hospital determines which specific equipment needs to function during a power outage and be connected to emergency power. Duplex receptacles on the critical branch of the emergency power system are provided for selected pieces of equipment (such as refrigerators and PCs) to allow for limited operation during a power outage. All receptacles essential to the specific procedure should be on the critical branch, while the selected Nuclear Medicine equipment is on the equipment branch. If the modality is used for interventional or emergent imaging, provide emergency power receptacles as required to support critical equipment and patient care.

Junction boxes are provided for equipment requiring a hardwire connection. Provide shielding behind all boxes and other penetrations in shielded scanning room surfaces. Certain modular casework units are provided with a utility access module with surface mounted electrical pre-manufactured raceways, which provides a chase for wiring. Conduits and junction boxes are provided to connect to the utility access module for power wiring.

Power conditioning and uninterruptible power supplies equipment may be required for Nuclear Medicine equipment, computers, or PACS workstations, where an interruption of power would not be acceptable during a specific procedure. Power conditioning and UPS equipment require physical space, working clearances, maintenance access, cooling / ventilation access, and coordination with casework.

Power and grounding of modern medical electronic equipment, computers, and displays requires careful consideration of power quality principles. The basic need for proper voltage and frequency is supplemented by other power quality concerns including:

- Source and load compatibility.
- Distortion of voltage and current wave forms by harmonics present in the power systems.
- Sensitivity and susceptibility of electronic equipment loads to interruptions, surges, harmonic wave form distortions, and noise (RF, EMI, etc.).

Power systems and equipment characteristics need to be evaluated to determine effective solutions to reduce the potential sources of interference, reduce the susceptibility of the load equipment, or to apply power conditioning equipment (IEEE Std. 1100-1999, the IEEE Recommended Practice for Powering and Grounding Electronic Equipment).

Security and Access Control

Security and access control requirements may apply to selected areas of the Nuclear Medicine suite. Specific Patient Privacy and HIPPA requirements may affect IT system components location, separation from non-secure components, and local staff screen or display orientation. Radiation Materials storage rooms and cabinets, and PACS server rooms and other critical IT infrastructure areas may require access control systems. Radiation detectors and alarms may be required at selected areas of Nuclear Medicine.

Life Safety

Purpose

The life safety program should be developed to provide a reliable system to protect the building occupants, firefighting personnel, building contents, building structure, and building function. This can be accomplished by limiting the development and spread of a fire emergency to the area of origin and thereby reduce the need for total occupant evacuation.

The design aspects of the facility which relate to the fire and life safety include:

- Structural fire resistance;
- Building compartmentalization;
- Fire detection, alarm and suppression;
- Smoke control and exhaust;
- Firefighter access and facilities;
- Emergency power
- Emergency Egress and Exit Lighting

New hospital construction and renovated areas of existing facilities are required to be fully protected by an automatic fire suppression system.

The minimum width of corridors and passageways in Nuclear Medicine areas is 5'-0" in areas used by staff. The minimum width of corridors in areas used by inpatients is 8'-0"

Provide handrails on both sides of the corridors in patient areas.

Nurse control areas are permitted to be open to the corridors.

Waiting areas are also permitted to be open to the corridors.

Refer to the latest editions of NFPA 101 "Life Safety Code", International Building Code and additional standards published by the National Fire Protection Association (NFPA).

Energy Conservation

The HVAC, Plumbing, Power and Lighting Systems should be designed for overall energy efficiency and lowest life-cycle cost. This should include the use of high efficiency equipment and fixtures and a programmable control system. The minimum energy standard shall be the latest edition of ASHRAE/IESNA Standard 90.1.

Communications

Telephone

Telephone outlets are typically provided at each workstation or in each room. Desk outlets are 18" AFF and wall phone outlets are 48" AFF. Desk outlets may be combined with modular data ports into a single-gang outlet. Certain modular casework units are provided with a utility access module that houses communication outlets and provides a chase for cabling. Infrastructure will be extended to local telecommunications room via available pathways util-

izing cable tray, sleeves through fire / smoke partitions, and conduit stubs / backboxes to work area. Conduits and junction boxes are provided to connect to the utility access module for telephone service. Current technologies such as “voice over internet protocol”, or VoIP, and IP wireless systems require coordination with the ADP/LAN telecommunications infrastructure.

Automatic Data Processing (ADP)

ADP, or computer outlets, are typically provided at each workstation with a personal computer (PC) and/or printer. ADP includes local area networks (LAN's), PACS applications, and wireless LAN's (WLAN). Desk outlets are 18" AFF. Multi-port telecommunications outlets are provided in accordance with BICSI and ANSI-EIA/TIA standards for telecommunications. Infrastructure will be extended to local telecommunications room via available pathways utilizing cable tray, sleeves through fire / smoke partitions, and conduit stubs / backboxes to work area. Certain modular casework units are provided with a utility access module that houses communication outlets and provides a chase for cabling. Conduits and junction boxes are provided to connect the utility access module for ADP service. Cable and jack identification and color coding are essential to proper administration of the ADP systems.

Public Address

The Nuclear Medicine department will not have an independent public address (PA) system. The department paging and public address will be included as part of the hospital-wide PA system. Speakers are typically located in corridors and public spaces. The actual system configuration will depend on the overall design layout and the functional requirements.

Miscellaneous Systems

A local sound system may be provided for selected scanning rooms to provide background music during the procedure. Nurse call and/or intercom systems may be provided for communications between the control room and the scanning room. A closed circuit TV system may be provided for direct observation of the patient during the procedure. Other systems, such as MATV, CATV, or local digital video monitoring may be provided.

Waste Management

Waste, soiled linen, recycling materials and reusable utensils from Nuclear Medicine services may come into contact with, and be contaminated by, radiopharmaceutical materials. Depending on the energy of radiopharmaceuticals used for a specific service, normal Waste Management procedures may need to be modified for the safety of staff. Coordinate facility design with specific procedural modifications as required.

Medical Waste

Medical waste is generated in exam and treatment spaces where it is bagged, collected and transported to the soiled utility rooms. Then it is held in separate containers pending transport to the medical waste handling facility.

General Waste

General waste is generated in all spaces and is held in containers for collection and sorting into carts or bagged and placed in a waste chute and transported to the waste handling facility.

Recycling

Methods for sorting, collecting, transporting and disposing of recyclable products must be specifically analyzed for each facility and location.

The optional use of disposable and reusable products should be considered.

Soiled Linen

Soiled reusable linens are generated in exam rooms, treatment spaces, and patient and staff gowning areas. They are collected in carts or hampers in the soiled utility room; or bagged and transported to (a) central collection area(s) via soiled linen chutes or carts.

Disposable linens are included with either general recyclable waste or medical waste as appropriate.

Utensils

Reusable utensils include bedpans, urinals, emesis basins and other stainless steel items, which are used in exam and treatment areas. They are transported to the soiled utility room where they are processed (if steam washers are available) or collected for reprocessing and transported to the Sterile Processing Department.

Space Requirements

Space requirements will vary with the selection of waste collection and recycling methods / systems. Space requirements need to be analyzed for each optional method or system considered for new and existing facilities.

Transportation**Records**

Nuclear Medicine utilizes digital imaging and retrieval techniques. Viewing, interpretation and video image manipulation areas should have data communication access.

Specimens

Specimens may be drawn in this department.

Pharmaceuticals

Pharmaceuticals, including narcotics, are transported by pharmacy personnel in locked carts or by a robotic system to the department. Narcotics are delivered to a narcotics locker which

is located in a clean supply or patient prep area and is remotely alarmed to the nearest nursing control station.

Vendors may deliver radionuclides or generator kits for clinical or research uses that require security and special handling. A dedicated area in the Radio Pharmacy or another secured area must be identified for that purpose. Used radiopharmaceutical containers and / or kits and radiation-contaminated waste articles which are retained on-site for the period of decay, are maintained in a double-locked decay storage room or closet as required by the materials stored. The National Council on Radiation Protection and Measurement (NCRP) regulates storage. The Nuclear Regulatory Commission (NRC) regulates radioactive material storage and disposal. A physicist supervises the secured storage within the department, but it may also be in another secured area of the facility.

Materials

Clean supplies are transported by exchange carts which are stored in the Clean Supply Room. Supplies are transported by Service Elevator and through hospital corridors separated from patient traffic where possible. Deliveries are scheduled during hours when patient visits are not scheduled.

Linen

Disposable linens are delivered as part of clean supplies.

Sterile Supplies

The use of sterile supplies is minimal as is accommodated by prepackaged or disposable items delivered with clean supplies.

Food

Meal and nourishment deliveries to Nuclear Medicine are not required.

Waste

Waste is collected by housekeeping staff and transported to the Soiled Utility Room, from where it is disposed.

A small room with shelves to hold radioactive waste for decay may be required in many facilities. These materials may have a very short half-life and may not be significantly radioactive within a short amount of time. Access to commercial waste disposal is very limited and is very expensive when available. "Decay-in storage" is the waste disposal method of choice. The amount of such space is determined by the amount of materials prepared on-site versus the procurements from commercial radiopharmacies to which unused material is ordinarily returned.

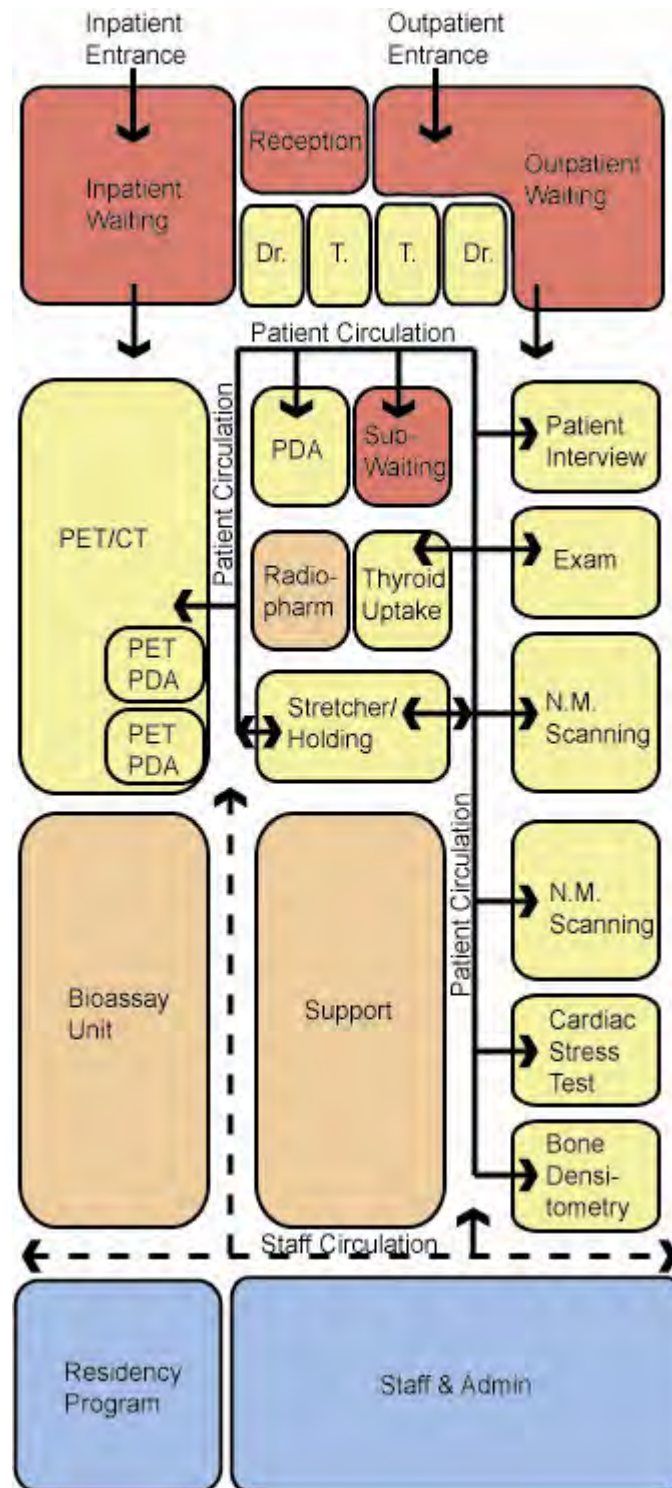
Section 3: Functional Diagrams

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Nuclear Medicine

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NUCLEAR MEDICINE: Functional Diagram



Section 4: Guide Plates

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PET / CT & SPECT/CT

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PET/CT Scanning Room.....

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PET/CT Control Room

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PET/CT System Component
Room

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Support Areas

Radiopharmacy.....

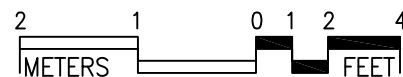
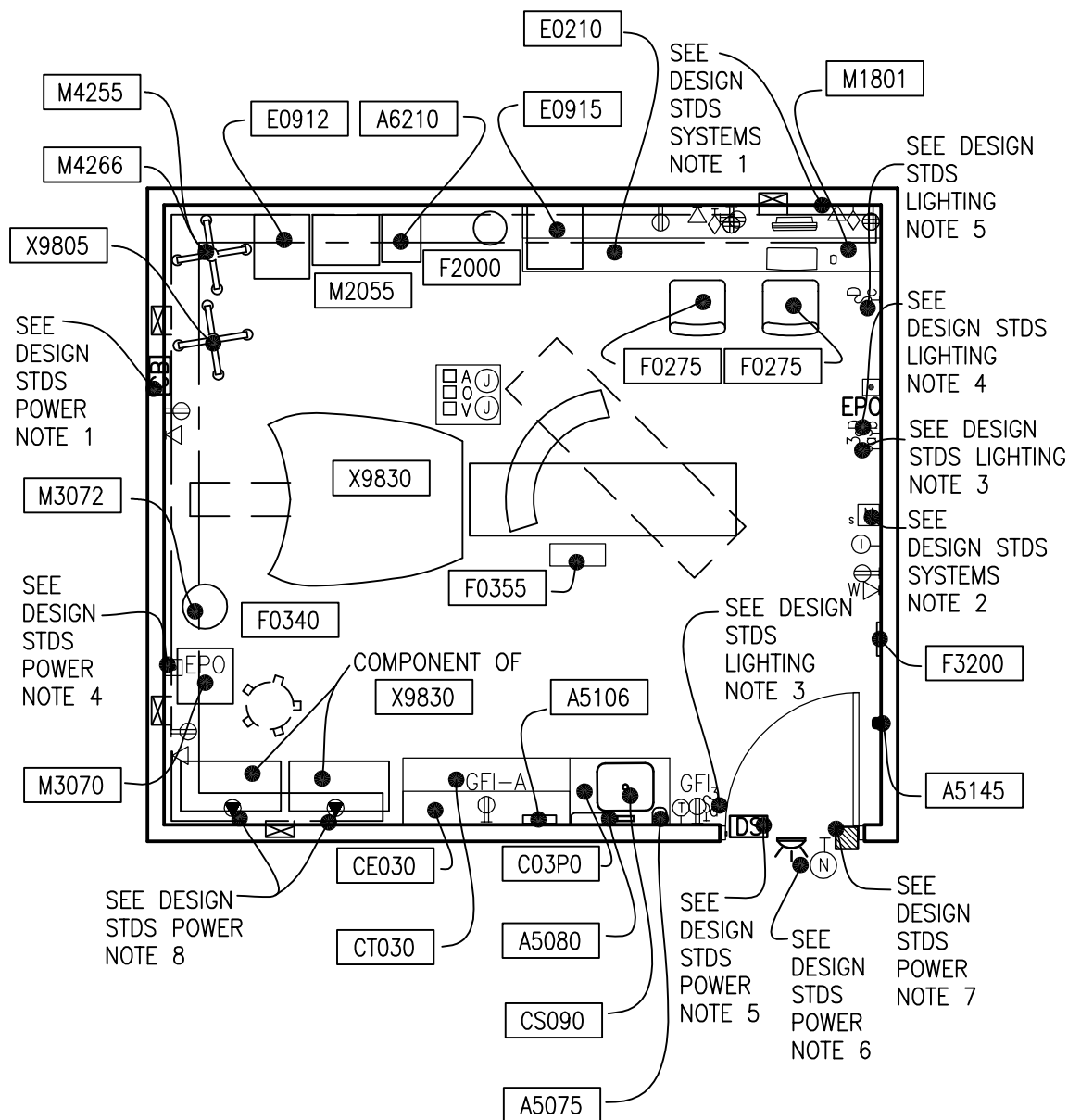
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Nuclear Medicine Scanning Room (NMGS1)

400 NSF

Floor Plan

37.2 NSM



3/16" = 1'-0"

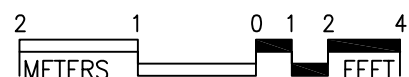
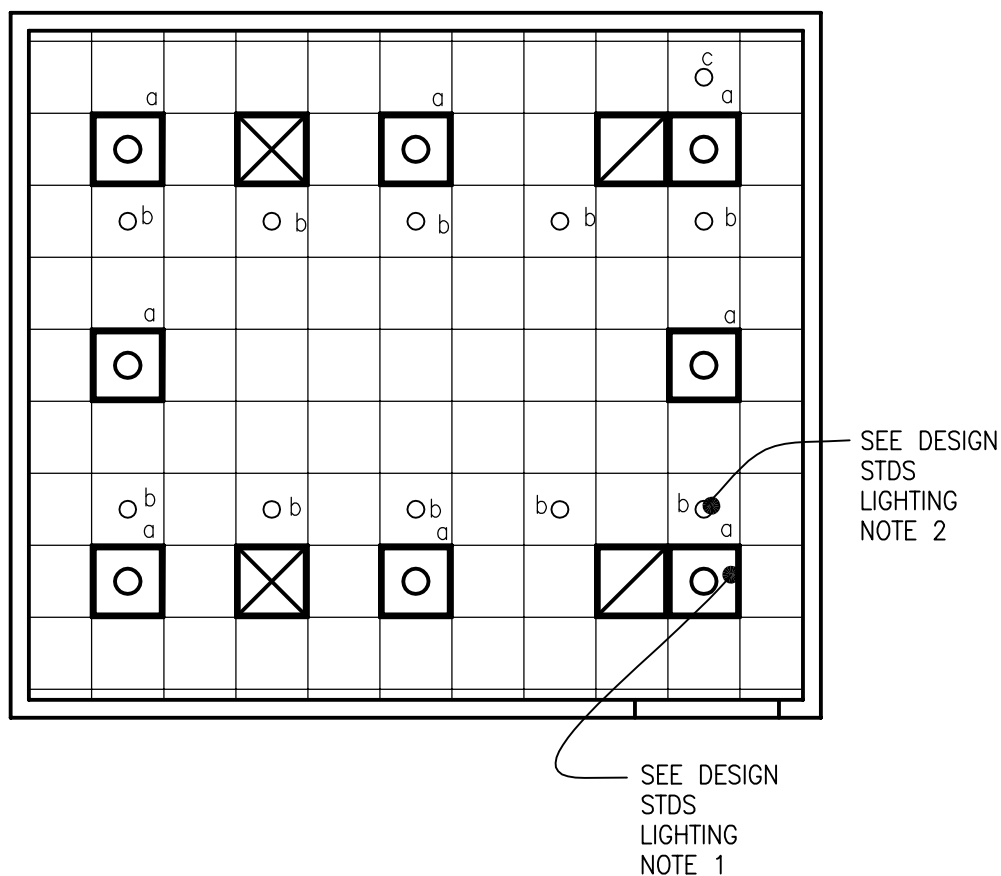
Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

Nuclear Medicine Scanning Room (NMGS1)

400 NSF

Reflected Ceiling Plan

37.2 NSM



$$3/16" = 1'-0"$$

The locations and quantities of the air outlets and inlets are tentative and may not represent the optimum design solution(s) envisioned by the designer, who shall study the layout, calculate air volumes, and may alter the arrangement shown in the reflected ceiling plan, as required, to produce a project-specific air distribution system design.

Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

NM SCANNING ROOM (NMGS1): Design Standards

ARCHITECTURAL

Ceiling:	Acoustical Tile Ceiling
Ceiling Height:	Coordinate with Equip. Manufacturer
Wall Finish:	Paint
Wainscot:	--
Base:	Integral Cove Base
Floor Finish:	Welded Seam Sheet
Sound Protection:	Yes

Notes:

1. Walls should be shielded if necessary.

LIGHTING

General: Fluorescent lights will provide illumination level up to 50 FC during patient transfer on and from the table, equipment setting, room cleaning, and equipment maintenance.

Special: Incandescent luminaires controlled by dimmer will provide lower illumination levels down to 5 FC during scanning. Luminaires shall be located to avoid direct glare for patient comfort.

Notes:

1. 2'x2' fluorescent recessed luminaire, acrylic prismatic lens, with (2) FB031T8-U lamps, 4100 K, CRI=85 (minimum).
2. 8-inch dia., recessed incandescent downlight, with recessed Fresnel lens, and 150W/A21 inc. horizontally mounted lamp.
3. 3-way switch for NM Room fluorescent lighting control; located at entrance door and at control area.
4. Dimmer for NM Room incandescent downlights control; located at control area.
5. Dimmer for Control area incandescent downlights control.

POWER

General: The electrical power as shown is to be used as a guide only. Equipment locations, dimensions and wiring requirements should be per the x-ray system suppliers' equipment drawings. Electrical

trades should provide necessary conduits, openings, bushings, nipples, flexible conduits, surface, recessed, wall mounted and floor raceways, etc., as required at the various junction boxes, duct and conduit terminations to allow proper connections of the scanner equipment and related accessories.

Emergency: Emergency power for scanner equipment, controls, and selected receptacles as determined by the Hospital.

Notes:

1. 480V, 3P-100A circuit breaker, with adjustable trip, shunt trip, flush mounted. Run empty 50 mm (2" C) from circuit breaker to x-ray duct above finished ceiling.
2. 10" W x 3-1/2" D flush vertical wall duct with 300 mm (12") wide screw-on cover. Connect to x-ray duct above finished ceiling and terminate at finished floor.
3. 10" W x 3-1/2" D x-ray duct above finished ceiling with 250 mm (10") wide screw-on cover. Connect to vertical wall duct.
4. Emergency Power Off pushbutton station. Refer to specific radiology equipment requirements for EPO. Connect to shunt trip at main disconnect.
5. Door switch with NO/NC contacts. Connect to x-ray machine control circuit. X-ray machine should not start until the entrance door is closed.
6. Warning light with wording "X-RAY ON DO NOT ENTER". Provide power, interface with x-ray machine via interface relay.
7. X-ray warning light interface relay with low voltage power supply to match x-ray equipment requirements.
8. Notes 5, 6, & 7 are not relevant to nuclear medicine unless PET/CT or SPECT/CT is a function of a particular room and then warning light should read "X-Ray in use, Do Not Enter."

9. Special outlet for UPS unit; outlet requirements, configuration as coordinated with the equipment.

Medical Vacuum:
Oxygen:

Yes
Yes

COMMUNICATION/SPECIAL SYSTEMS

ADP:	Yes
Data:	Yes
Telephone:	Yes
Intercom:	Yes
Nurse Call:	Yes
Public Address:	--
Radio/Entertainment:	--
MATV:	--
CCTV:	--
MID:	--
Security/Duress:	--
VTEL:	--
VA Satellite TV:	--

Notes:

1. 4-port telecommunication outlet for PACS.
2. Staff nurse call station to annunciate at nurse's station

HEATING, VENTILATING AND AIR CONDITIONING

Inside Design Conditions:	70 °F to 75 °F (21 °C to 24 °C)
	30 to 60% Relative Humidity
Minimum Air Changes per Hour:	6
	-Supply Air
100% Exhaust:	Yes
100% Outside Air:	No
Room Air Balance:	Negative
Dedicated Exhaust System:	No
Occupancy:	3
AC Load – Equipment:	9,300 Btuh (2,750 W)
AC Load Lighting:	1.4 W/SF (15 W/M ²)

Notes:

1. Verify cooling loads and other specific requirements with the equipment manufacturer on a specific project.

PLUMBING AND MEDICAL GASES

Cold Water:	Yes
Hot Water:	Yes
Laboratory Air:	--
Laboratory Vacuum:	--
Sanitary Drain:	Yes
Reagent grade Water:	--
Medical Air:	Yes

NM SCANNING ROOM (NMGS1): Equipment Guide List

JSN	NAME	QTY	ACQ / INS	DESCRIPTION	SPEC
A1010	Telecommunication Outlet	1	CC	Telecommunication outlet location.	27 31 00
A1012	Telephone, Wall Mounted, 1 Line	1	CC	Telephone, wall mounted, 1 line.	27 31 00
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.	
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels. For general purpose use throughout the facility.	10 28 00
A5106	Waste Disposal Unit, Sharps w/Glove Dispenser	1	VV	The unit is designed for the disposal of sharps and complies with OSHA guidelines for the handling of sharps. It shall house a 5 quart container and be capable of being mounted on a wall. It shall have a glove dispenser attached. The unit shall be secured by a locked enclosure.	
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate. For general purpose use throughout the facility to hang various items of apparel.	10 28 00
A6210	Uninterruptible Power Supply, Single Phase	2	VV	Stand alone uninterruptible power supply (UPS) available in 120, 208 or 240 VAC configuration. Power output can range from 200 VA to 3000 VA depending on the application. Used in areas where power protection is required for computer systems, communication equipment, etc. The UPS is used to keep the equipment on line or safely turn the equipment off in the event of a power loss.	

C03F0	Cabinet, U/C/B, 1 Shelf, 2 Half DR, 2 DO, 36x30x22	2	CC	Standing height under counter base cabinet with an adjustable shelf and two half width drawers above solid hinged doors. Also referred to as a combination cabinet or a drawer and cupboard cabinet. For general purpose use throughout the facility.	12 32 00
C03P0	Cabinet, Sink, U/C/B, 2 Door, 30" W	1	CC	Standing height under counter base sink cabinet. 36" H x 30" W x 22" D with two solid hinged doors. Also referred to as a double-door sink cabinet. For general purpose use throughout the facility where a sink is to be used. Coordinate actual clear cabinet dimension with the actual outside dimension of sink that is specified to ensure that they are compatible.	12 32 00
CE030	Cabinet, W/H, 2 SH, 2 GDO, Sloping Top, 38x30x13	1	CC	Wall hung cabinet with two adjustable shelves, framed-glass hinged doors, and sloping top. Also referred to as a framed-glass hinged double door wall case. For general purpose use throughout the facility.	12 32 00
CS090	Sink, SS, Single Compartment, 7.5x19x16 ID	1	CC	Single compartment stainless steel sink, drop-in, self-rimming, ledge-type, connected with a drain and provided with a mixing faucet. It shall also be provided with pre-punched fixture holes on 4" center, integral back ledge to accommodate deck-mounted fixtures, brushed/polished interior and top surfaces, and sound deadened. Recommended for use in suspended or U/C/B sink cabinets having a high plastic laminate or Chemsurf laminate countertop/work surface. Coordinate actual outside sink dimensions with the actual clear dimension of cabinet specified to ensure that they are compatible. For general purpose use throughout the facility.	22 40 00

CT030	Countertop, High Pressure Laminate	AR	CC	High pressure laminate countertop (composition of wood particle core with plastic laminate surface) having a hard smooth surface finish, standard thickness of 1", and a 4" butt backsplash/curb. Also referred to as a work surface or work top. Available in a wide choice of colors, patterns, and depths. Used in general purpose areas requiring a basic work surface arrangement with limited heat resistance and poor chemical resistance. Pricing based upon a 24" depth.	12 36 00
E0210	Worksurface, w/Overhead Cab, Wall Mtd, 48" W	1	VV	THIS TYPICAL INCLUDES: 2 Vertical Hanging Strips 1 Lockable Flipper Unit 1 Shelf, Storage/Display 1 Light 1 Cantilevered Work Surface	
E0912	Locker, Supply, Med Surg, Wall Mtd	1	VV	Medical/Surgical Supply locker, Wall Mounted, Approx 23"W x20"D. THIS TYPICAL INCLUDES: 1 Wall Mounted Rail 1 Locked Storage Container 4 Tray/Shelves 5 Drawers, 3"H (76mm) 2 Drawers, 6"H (152mm) 2 Tray/Shelf Dividers Drawer Organizer Bins Consider the need for an E0921 to transport the locker from place to place.	

E0915	Locker, Supply, Medication, Wall Mtd, 23"W x 20"D	1	VV	<p>THIS TYPICAL INCLUDES:</p> <ul style="list-style-type: none"> 1 Wall Mounted Rail 1 Locked Storage Container 2 Tray/Shelves 1 Locker Drawer w/Locked Lid, 6"H (152mm) 5 Drawers, 3"H (76mm) 3 Drawers, 6"H (152mm) 2 Tray/Shelves Divider Drawer Organizer Bins <p>Consider the need for an E0921 to transport the locker from place to place.</p>	
E1500	Rail, MOD, W/MNTD, HX144XD	1	VV	Wall mounted rail used for hanging (mounting) lockers, shelves drawers on a wall.	
F0275	Chair, Swivel, High Back	2	VV	Highback contemporary swivel chair, 41" high X 23" wide X 23" deep with five (5) caster swivel base and arms. Chair may be used at desks or in conference rooms. Back and seat are foam padded and upholstered with either woven textile fabric or vinyl.	
F0340	Stool, Self Adjusting	1	VV	Self adjusting stool. Consists of a foam padded upholstered seat with attached foot rest for added comfort. Mounted on swivel casters. Designed for doctor's use during examinations.	
F0355	Footstool, Straight	1	VV	Step stool. Used to assist patients getting on and off exam or surgical tables. Fitted with electrically conductive rubber tips.	
F2000	Basket, Wastepaper, Round, Metal	1	VV	Round wastepaper basket, approximately 18" high X 16" diameter. This metal unit is used to collect and temporarily store small quantities of paper refuse in patient rooms, administrative areas and nursing stations.	
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).	

M0750	Flowmeter, Air, Connect w/50 PSI Supply	1	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Requires the appropriate adapter for connection to the wall outlet and fitting to connect to tubing. Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.	
M0755	Flowmeter, Oxygen, Low Flow	1	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Database pricing includes DISS fitting and DISS power outlet and wall adapter. Other fitting and adapter configurations are available.	
M0765	Regulator, Vacuum	1	VV	An air/oxygen mixer is designed to accurately control a pressurized gas mixing with an oxygen concentration. Unit contains audible alarms to warn of supply failure, an auxiliary outlet and a oxygen concentration control adjustment range from 21% to 100%. The unit can also be used to supply an accurate pre-mixed gas source to respiration or ventilator units. A specific application may require an additional air inlet filter/water trap.	
M1801	Computer, Microprocessing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers. The system shall have the following minimum characteristics: a 2.8 GHz Pentium processor; 512 MB memory; 80GB hard drive; 32/48x CD-ROMDVD combo; a 3.5" floppy drive; 1.44MB network interface card; video 32 MB NVIDIA; a 15 inch flat panel color monitor. The computer is used throughout the facility to input, manipulate and retrieve information.	
M2055	Shelving, Storage, Wire, CRS, w/Adjustable Shelves	1	VV	Stationary, wire, shelving unit. Unit has fully adjustable shelves constructed of stainless steel. For use in general purpose storage areas. Shelving is provided in various sizes and configurations. Price provided is for a unit approximately 74"H x 18"D x 48"W with four shelves.	

M3070	Hamper, Linen, Mobile, w/Lid	1	VV	Mobile linen hamper with hand or foot operated lid. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Holds 25" hamper bags. Mounted on ball bearing casters. For linen transport in hospitals and clinics.	
M3072	Frame, Infectious Waste Bag w/Lid	1	VV	Frame for an infectious waste collection bag. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Adjust to hold 18" or 25" trash bags. Mounted on ball bearing casters and includes permanently mounted hinged lid. Provides means of bagging infectious waste at point of waste generation.	
M4250	Pump, Syringe, Infusion	1	VV	The infusion syringe pump ensures highly accurate volume delivery and consistent flow for small volumes (<50 ml) of pharmacologic agents or thick feeding solutions. It shall be small, lightweight construction, making it transportable. Shall have menu-driven programming capable of flow rates (e.g. 0.1 or 1.0 mL/hr) that are intended for long-term bedside use and/or critical care patient transport, plunger positioning sensor, LCD display for easy viewing, volume limit programming to serve as a convenient cue of volume or dose delivery completion and multiple delivery modes for all applications requiring precisely controlled infusion rates. The infusion pump shall have automatic syringe size sensing which will give the flexibility to accept a wide range of syringe sizes (up to 60 mL) from different manufacturers. Shall be battery powered/AC adapter.	
M4255	Stand, IV, Adjustable	1	VV	Adjustable IV stand with 4-hook arrangement. Stand has stainless steel construction with heavy weight base. It adjusts from 66 inches to 100 inches and is mounted on conductive rubber, ball bearing, swivel casters. Stand is used for administering intravenous solutions.	

M4266	Pump, Volumetric, Infusion, Multiple Line	1	VV	Volumetric infusion pump. Pump is self-regulating with automatic sensor and adjustable rate. Equipped with visual and audible alarms and up to 10 hour capacity battery. For the administration of a wide variety of therapeutic agents where precise control is required. Unit provides individual control to IV lines simultaneously.	
X9805	Stand, Injection, Nuclear Medicine	1	VV	An injection stand designed for arm positioning for radionuclide injections. The arm rest holds the patient's arm firmly in place. A utility tray sits adjacent to the armrest to hold supplies and includes a lead-lined multi syringe holder. The stand height is adjustable approximately from 29" to 44." Casters allow the stand to be rolled into position or out of the way for storage. It is structurally balanced so that it won't tip over.	
X9830	Scanner, Nuclear, SPECT, Dual Head	1	VV	The system shall be a single plane or variable angle dual detector emission system, designed for fast data acquisition and high patient throughput for Single Photon Emission Computed Tomography (SPECT), whole body and general purpose nuclear medicine procedures. It shall be designed to image at any energy range for any procedures. The unit detects and counts photons emanating from radiopharmaceuticals. Collimators available to suit full range applications. The system shall be DICOM 3.0 or latest version, compatible, for easy linkage to filmless image management systems and review stations.	

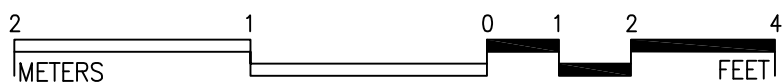
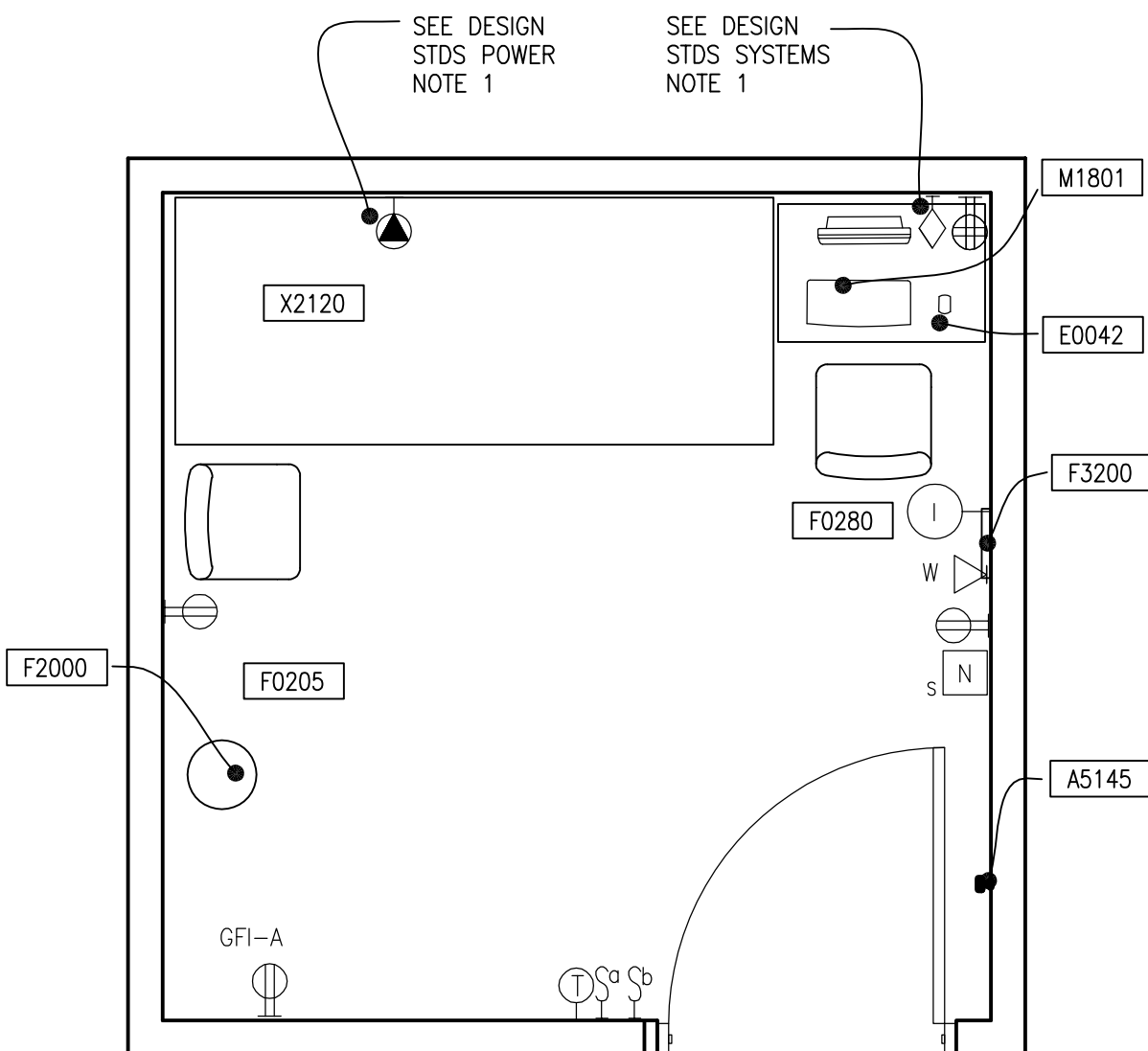


Bone Densitometry Room (XDBD1)

160 NSF

Floor Plan

14.9 NSM



3/8" = 1'-0"

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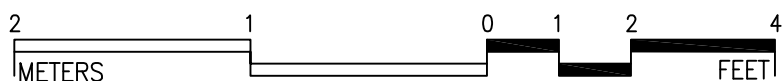
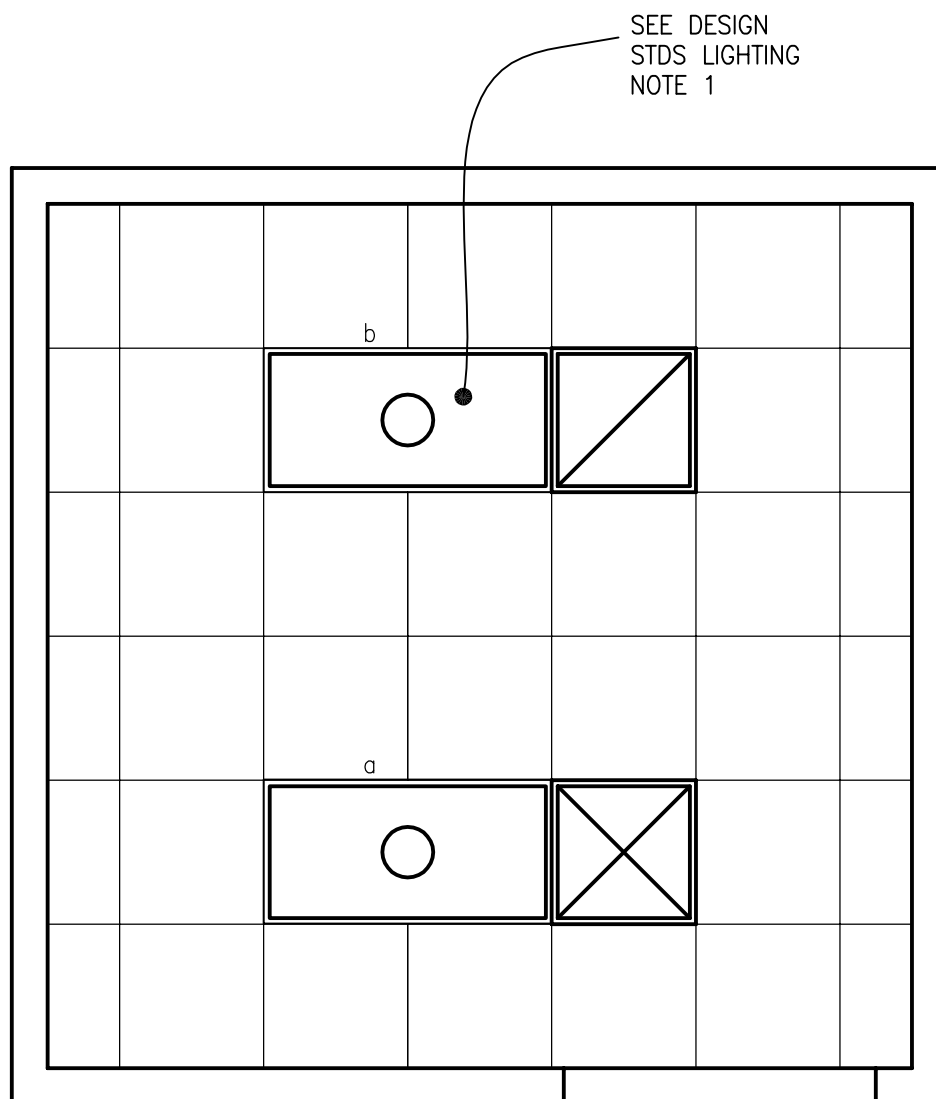


Bone Densitometry Room (XDBD1)

160 NSF

Reflected Ceiling Plan

14.9 NSM



$$\frac{3}{8}'' = 1'-0''$$

The locations and quantities of the air outlets and inlets are tentative and may not represent the optimum design solution(s) envisioned by the designer, who shall study the layout, calculate air volumes, and may alter the arrangement shown in the reflected ceiling plan, as required, to produce a project-specific air distribution system design.

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BONE DENSITOMETRY ROOM (XDBD1): Design Standards

ARCHITECTURAL

Ceiling:	Acoustical Tile Ceiling
Ceiling Height:	8'-0"
Wall Finish:	Paint
Wainscot:	--
Base:	Vinyl Base
Floor Finish:	Vinyl Composition Tile
Sound Protection:	Yes

Notes:

LIGHTING

General: Fluorescent lights provide illumination level up to 30 FC.

Special: Luminaires are dual switched for multi-level illumination.

Notes:

1. 2'x4' fluorescent recessed luminaire, acrylic prismatic lens, with (3) F32T8 lamps, 4100 K, CRI=85 (minimum), two ballasts.

POWER

General: The electrical power as shown is to be used as a guide only. Equipment locations, dimensions and wiring requirements should be per the x-ray system suppliers' equipment drawings. Electrical trades should provide all necessary conduits and wiring, to allow proper connections of the bone densitometry equipment and related accessories.

Emergency: Emergency power for the equipment, controls, and selected receptacles as determined by the Hospital.

Notes:

1. Special outlet for bone densitometry unit connection, coordinated with equipment requirements.

COMMUNICATION/SPECIAL SYSTEMS

ADP:	Yes
Data:	Yes
Telephone:	Yes
Intercom:	Yes
Nurse Call:	Yes
Public Address:	--

Radio/Entertainment:	--
MATV:	--
CCTV:	--
MID:	--
Security/Duress:	--
VTEL:	--
VA Satellite TV:	--

Notes:

1. 4-port telecommunication outlet for PACS station

HEATING, VENTILATING AND AIR CONDITIONING

Inside Design Conditions:

70°F to 75°F (21°C to 24°C)

30% to 60% Relative Humidity

Minimum Air Changes per hour: 6

-Supply Air

100% Exhaust:	No
100% Outside Air:	No
Room Air Balance:	Positive
Dedicated Exhaust System:	No
Occupancy:	3
AC Load – Equipment:	5,500 Btuh (1,600 W)
AC Load Lighting:	1.3 W/SF (14 W/M ²)

Notes:

1. Verify cooling loads and other specific requirements with the equipment manufacturer on a specific project.

PLUMBING AND MEDICAL GASES

Cold Water:	Yes
Hot Water:	Yes
Laboratory Air:	--
Laboratory Vacuum:	Yes
Sanitary Drain:	--
Reagent grade Water:	--
Medical Air:	--
Medical Vacuum:	--
Oxygen:	--

BONE DENSITOMETRY ROOM (XDBD1): Equipment Guide List

JSN	NAME	QTY	ACQ / INS	DESCRIPTION	SPEC
A1010	Telecommunication Outlet	1	CC	Telecommunication outlet location.	27 31 00
A1012	Telephone, Wall Mounted, 1 Line	1	CC	Telephone, wall mounted, 1 line.	27 31 00
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate. For general purpose use throughout the facility to hang various items of apparel.	10 28 00
F2000	Basket, Wastepaper, Round, Metal	1	VV	Round wastepaper basket, approximately 18" high X 16" diameter. This metal unit is used to collect and temporarily store small quantities of paper refuse in patient rooms, administrative areas and nursing stations.	
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).	
E0042	Workcenter, Computer, Free Standing, 48" W	1	VV	THIS TYPICAL INCLUDES: 1 TOOL RAIL 2 PAPER TRAY 1 DIAGONAL TRAY 1 FREESTANDING WORK SURFACE 1 MOBILE PEDESTAL, BOX/FILE 1 ADJUSTABLE KEYBOARD TRAY	
F0205	Chair, Side, Without Arms	1	VV	Upholstered side chair, 32" high X 21" wide X 23" deep with arms, padded seats and padded backs. Seat height is a minimum of 17". Available with or without sled base.	
F0280	Chair, Swivel, Low Back	1	VV	Low back contemporary swivel chair, 37" high X 25" wide X 31" deep with a five (5) caster swivel base, arms and foam padded seat and back upholstered with either woven textile fabric or vinyl.	

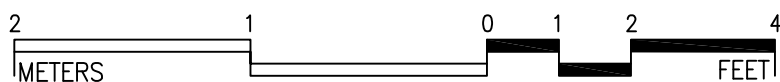
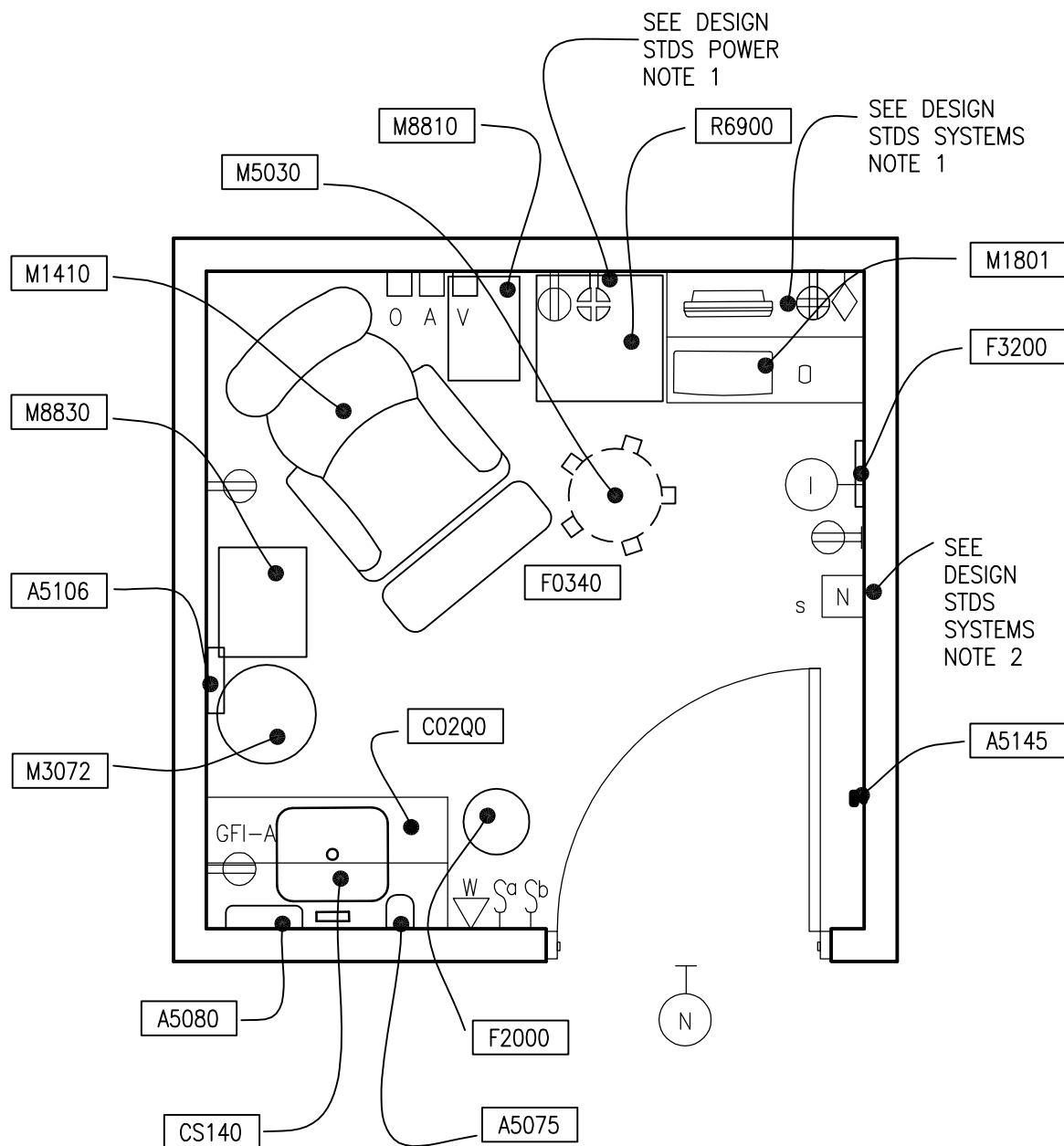
M1801	Computer, Microprocessing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers. The system shall have the following minimum characteristics: a 2.8 GHz Pentium processor; 512 MB memory; 80GB hard drive; 32/48x CD-ROMDVD combo; a 3.5" floppy drive; 1.44MB network interface card; video 32 MB NVIDIA; a 15 inch flat panel color monitor. The computer is used throughout the facility to input, manipulate and retrieve information.	
X2120	Scanner, Bone Density, Full Body	1	VV	Full body scanner used to determine bone mineral density measurements and vertebral assessment associated with osteoporotic fracture risk.	

Patient Dose Administration (NMIR1)

100 NSF

Floor Plan

9.3 NSM



3/8" = 1'-0"

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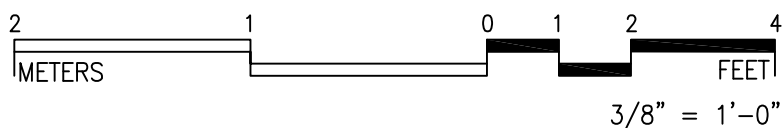
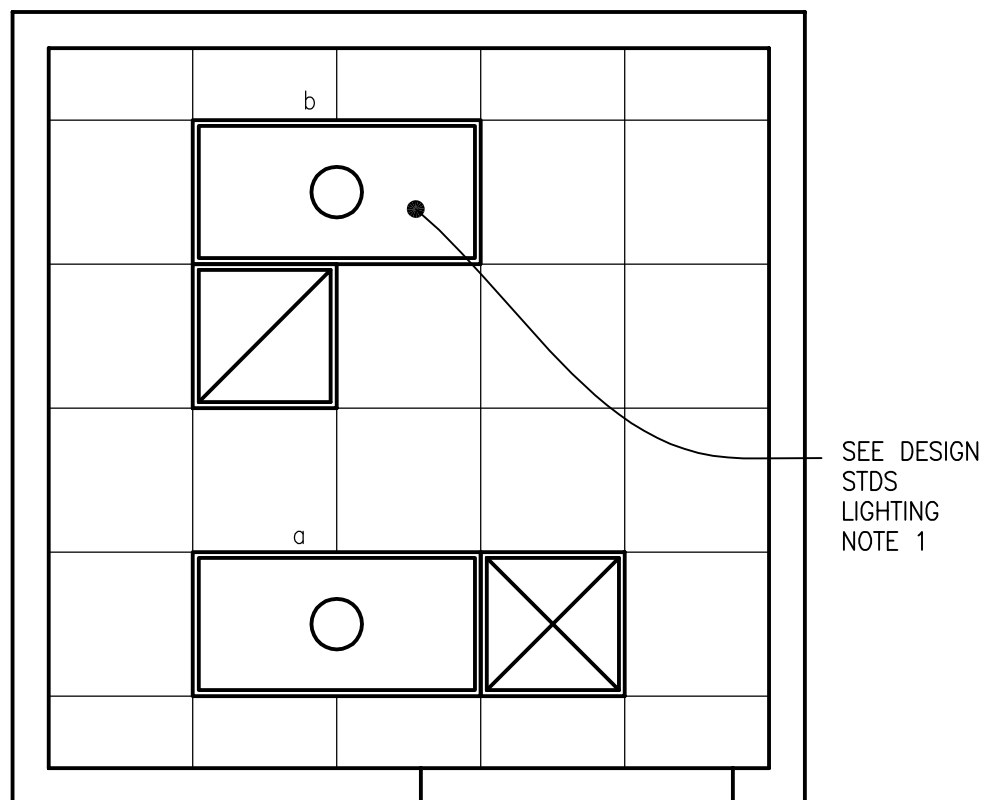


Patient Dose Administration (NMIR1)

100 NSF

Reflected Ceiling Plan

9.3 NSM



The locations and quantities of the air outlets and inlets are tentative and may not represent the optimum design solution(s) envisioned by the designer, who shall study the layout, calculate air volumes, and may alter the arrangement shown in the reflected ceiling plan, as required, to produce a project-specific air distribution system design.

Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

PATIENT DOSE ADMINISTRATION (NMIR1): Design Standards

ARCHITECTURAL

Ceiling:	Acoustical Tile Ceiling
Ceiling Height:	8'-0"
Wall Finish:	Paint
Wainscot:	--
Base:	Integral Cove Base
Floor Finish:	Welded Seam Sheet
Sound Protection:	Yes

Notes:

1. Room may need shielding depending upon intended use that might include high energy radioisotopes (PET), high dose radioisotope therapy or radiation interference with adjacent imaging rooms.

LIGHTING

General: Fluorescent lights provide illumination level up to 50 FC.

Special: Luminaires are dual switched for multi-level illumination.

Notes:

1. 2'x4' fluorescent recessed luminaire, acrylic prismatic lens, with (3) F32T8 lamps, 4,100 K, CRI=85 (minimum), two ballasts.

POWER

Notes:

1. Refrigerator outlet on emergency power

COMMUNICATION/SPECIAL SYSTEMS

ADP:	Yes
Data:	Yes
Telephone:	Yes
Intercom:	Yes
Nurse Call:	Yes
Public Address:	--
Radio/Entertainment:	--
MATV:	--
CCTV:	--
MID:	--
Security/Duress:	--
VTEL:	--

VA Satellite TV: --

Notes:

1. 4-port telecommunication outlet for PACS.
2. Staff nurse call station to annunciate at nurse's station.

HEATING, VENTILATING AND AIR CONDITIONING

Inside Design Conditions:

70°F to 75°F (21 °C to 24C°)

30% to 60% Relative Humidity

Minimum Air Changes per Hour: 6

-Supply Air

100% Exhaust Air: No

100% Outside Air: No

Room Air Balance: Positive

Dedicated Exhaust System: No

Occupancy: 3

AC Load – Equipment: 850 Btuh (250 W)

AC Load Lighting: 1.9 W/SF (20 W/M²)

Notes:

1. Verify cooling loads and other specific requirements with the equipment manufacturer on a specific project.

PLUMBING AND MEDICAL GASES

Cold Water:	Yes
Hot Water:	Yes
Laboratory Air:	--
Laboratory Vacuum:	Yes
Sanitary Drain:	--
Reagent grade Water:	--
Medical Air:	--
Medical Vacuum:	--
Oxygen:	--

PATIENT DOSE ADMINISTRATION (NMIR1): Equipment Guide List

JSN	NAME	QTY	ACQ / INS	DESCRIPTION	SPEC
A1010	Telecommunication Outlet	1	CC	Telecommunication outlet location.	27 31 00
A1012	Telephone, Wall Mounted, 1 Line	1	CC	Telephone, wall mounted, 1 line.	27 31 00
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.	
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels. For general purpose use throughout the facility.	10 28 00
A5106	Waste Disposal Unit, Sharps w/Glove Dispenser	1	VV	The unit is designed for the disposal of sharps and complies with OSHA guidelines for the handling of sharps. It shall house a 5 quart container and be capable of being mounted on a wall. It shall have a glove dispenser attached. The unit shall be secured by a locked enclosure.	
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate. For general purpose use throughout the facility to hang various items of apparel.	10 28 00
C02Q0	Cabinet, Sink, U/C/B, 1 Door, 36x24x22	1	CC	Standing height under counter base sink cabinet with a solid right or left-hinged door (appropriate door configuration to be indicated on equipment elevation drawings). Also referred to as a single-door sink cabinet. For general purpose use throughout the facility where a sink is to be used. Coordinate actual clear cabinet dimension with the actual outside dimension of sink that is specified to ensure that they are compatible.	12 32 00

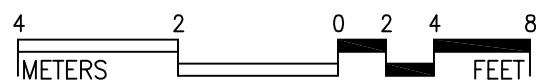
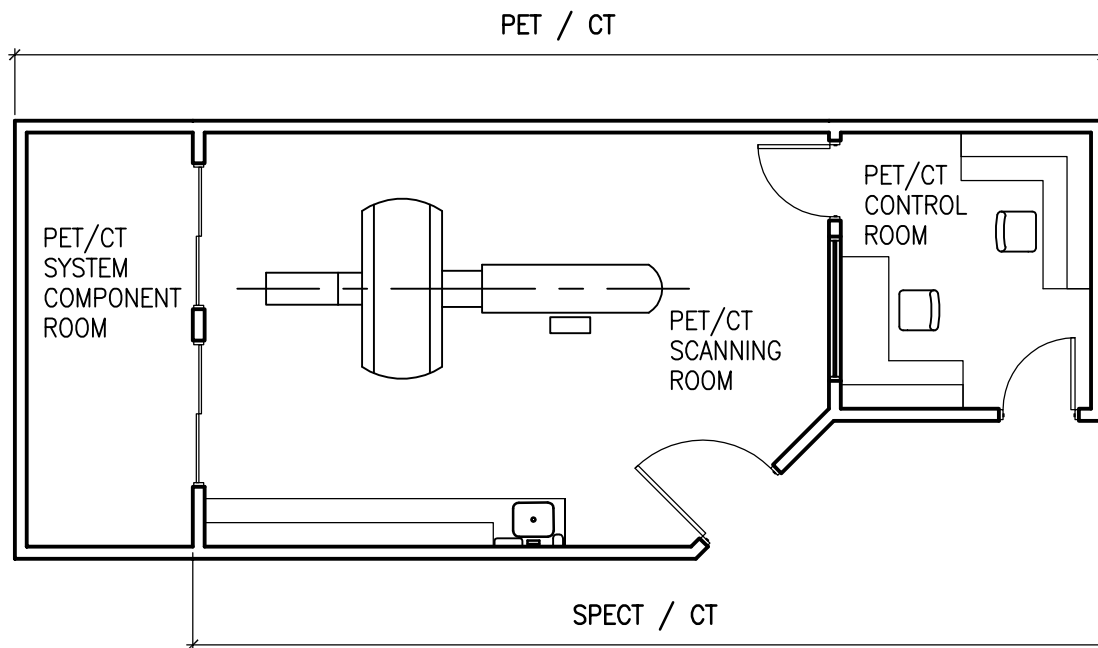
C03J0	Cabinet, U/C/B, 8 Half Drawers, 36x30x22	1	CC	Standing height under counter base cabinet with eight half width drawers of equal height. Also referred to as a drawer cabinet. For general purpose use throughout the facility.	12 32 00
C03L0	Cabinet, U/C/B, 1 DR, 3 Half DR, 1 Door, 30" W	1	CC	Standing height under counter base cabinet, 34" H x 30" W x 22" D with a full width drawer above three half width drawers alongside a solid right or left door/cupboard (appropriate door/cupboard configuration to be indicated on equipment elevation drawings). Also referred to as a combination cabinet or a drawer and cupboard cabinet. For general purpose use throughout the facility.	12 32 00
CE030	Cabinet, W/H, 2 SH, 2 GDO, Sloping Top, 38x30x13	2	CC	Standing height under counter base cabinet with an adjustable shelf and a full width drawer above solid hinged doors. Also referred to as a combination cabinet or a drawer and cupboard cabinet. For general purpose use throughout the facility.	12 32 00
CS140	Sink, SS, Single Compartment, 10x14x16 ID	1	CC	Single compartment stainless steel sink, drop-in, self-rimming, ledge-type, connected with a drain and provided with a mixing faucet. It shall also be provided with punched fixture holes on 4" center, integral back ledge to accommodate deck-mounted fixtures, brushed/polished interior and top surfaces, and sound deadened. Recommended for use in suspended or U/C/B sink cabinets having a high plastic laminate or Chemsurf laminate countertop/work surface. Coordinate actual outside sink dimensions with the actual clear dimension of cabinet specified to ensure that they are compatible. For general purpose use throughout the facility.	22 40 00

CT050	Countertop, Stainless Steel	AR	CC	Stainless steel countertop (composition of heavy-gauge Type No. 304 stainless steel) having a smooth satin finish and integral 4" backsplash/curb. Also referred to as a corrosion-resistant steel work surface or work top. Available in various depths. Used in areas where excellent ease of cleaning, abrasion resistance, bacteria resistance, impact resistance, load capacity and moisture resistance, are of concern. Pricing based upon a 24" depth.	12 36 00
F0340	Stool, Self Adjusting	1	VV	Self adjusting stool. Consists of a foam padded upholstered seat with attached foot rest for added comfort. Mounted on swivel casters. Designed for doctor's use during examinations.	
F2000	Basket, Wastepaper, Round, Metal	1	VV	Round wastepaper basket, approximately 18" high X 16" diameter. This metal unit is used to collect and temporarily store small quantities of paper refuse in patient rooms, administrative areas and nursing stations.	
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).	
M1410	Chair, Laboratory, Blood Drawing, w/Storage	1	VV	Laboratory blood drawing chair with storage. Chair has built-in storage cabinet(s) and locking arm assembly that may be positioned on either side of the fiberglass chair.	
M1801	Computer, Microprocessing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers. The system shall have the following minimum characteristics: a 2.8 GHz Pentium processor; 512 MB memory; 80GB hard drive; 32/48x CD-ROM/DVD combo; a 3.5" floppy drive; 1.44MB network interface card; video 32 MB NVIDIA; a 15 inch flat panel color monitor. The computer is used throughout the facility to input, manipulate and retrieve information.	

M3072	Frame, Infectious Waste Bag w/Lid	1	VV	Frame for an infectious waste collection bag. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Adjust to hold 18" or 25" trash bags. Mounted on ball bearing casters and includes permanently mounted hinged lid. Provides means of bagging infectious waste at point of waste generation.	
M5030	Stool, Surgeon, Revolving	1	VV	Revolving stool. Consists of a padded upholstered seat with height adjustment. Unit rotates and is mounted on ball bearing swivel casters. Designed for use in examinations, treatment, and surgical procedures.	
M8810	Stand, Mayo	1	VV	Adjustable instrument table. Table is corrosion resistant stainless steel construction and is mounted on two casters with two skid rails. It has telescopic upright adjusts from 39 inches to 60 inches with automatic locking device, and removable 13"x19" instrument tray. Designed for use in operating and procedure rooms.	
M8830	Table, Instrument/Dressing, Mobile	1	VV	Mobile instrument/dressing table, approximately 34" H x 20" W x 16" D Corrosion resistant stainless steel mobile table with sound-deadening shelf and drawer. Unit is mounted on 2" casters. Designed for all purpose use in the hospital or clinic.	
R6900	Refrigerator, Bio, Radio/Pharm, Approx. 5 CuFt	1	VV	Radiopharmaceutical and biological refrigerator with key-lock door. This unit is lead-lined on all sides for radiopharmaceuticals, biologicals and other radioactive materials. Freezer compartment and refrigerator eliminates thermal lag placement of cooling units inside the shielding. This unit is used as a storage unit in hospitals and laboratories that handle radioactive materials.	

PET/CT & SPECT/CT

Key Plan

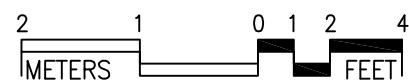
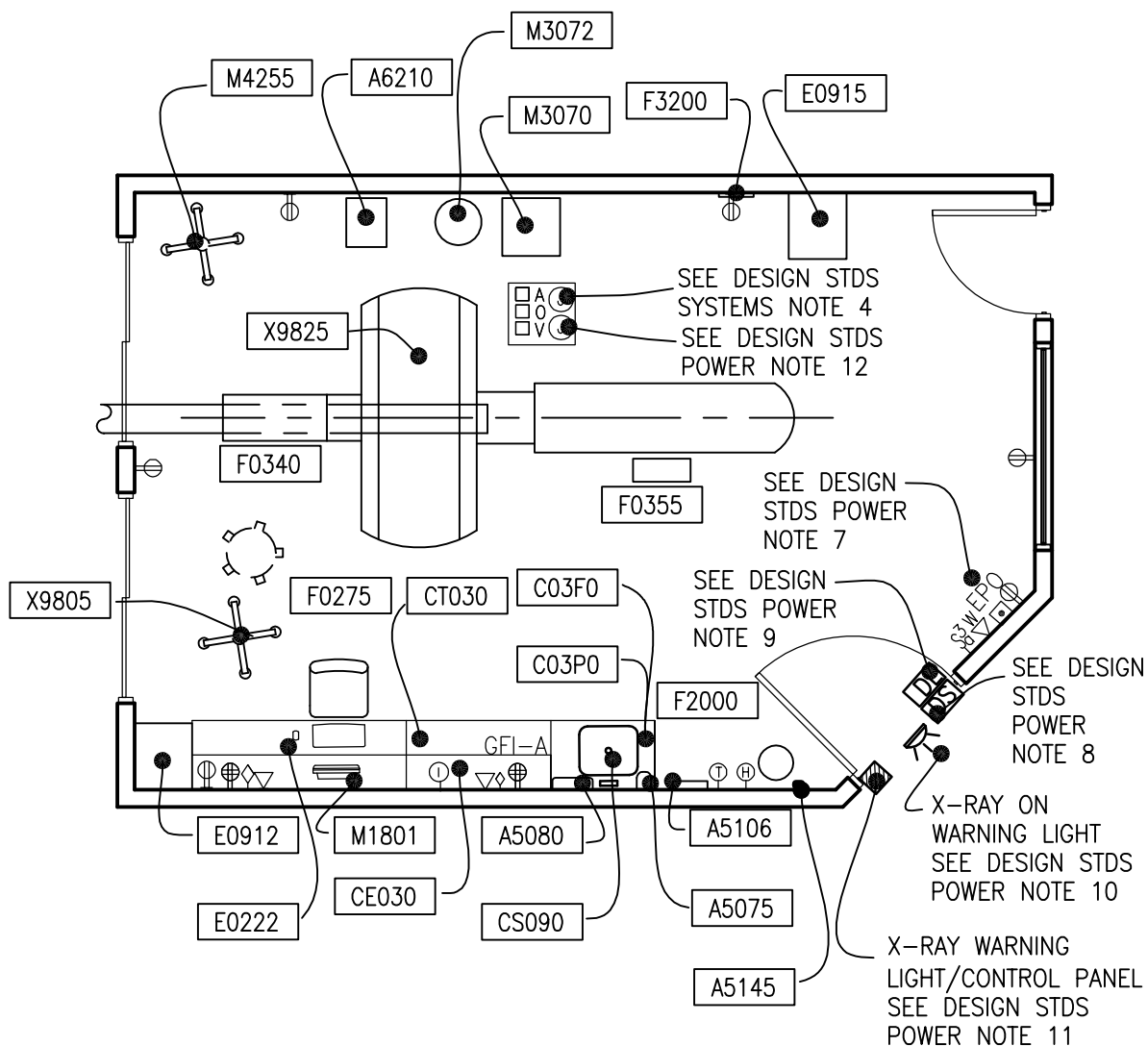


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PET/CT Scanning Room (NMSS1)

Floor Plan

450 NSF
41.8 NSM



3/16" = 1'-0"

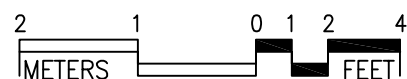
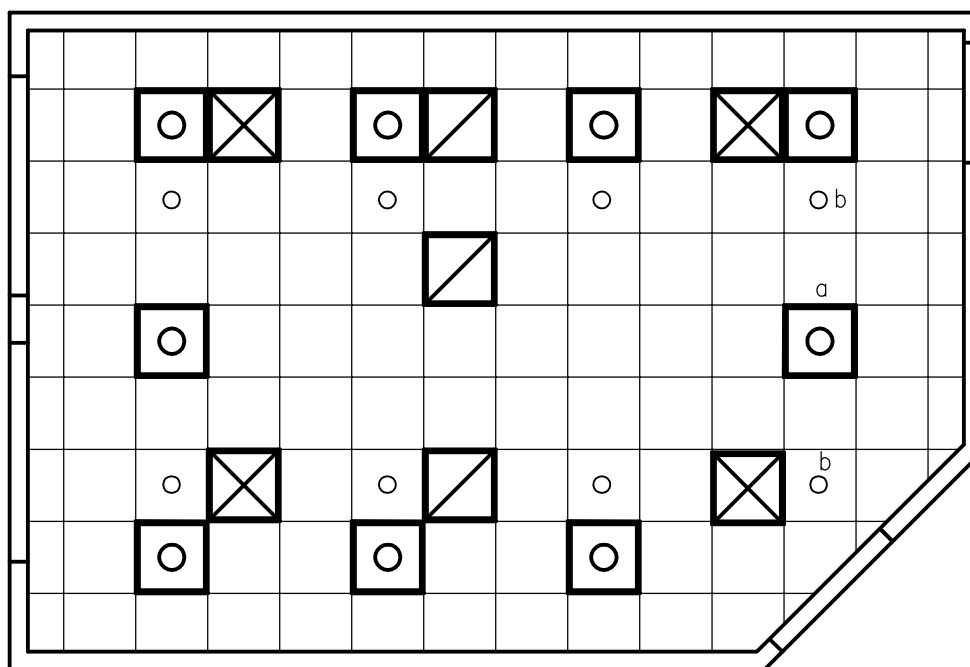
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PET/CT Scanning Room (NMSS1)

450 NSF

Reflected Ceiling Plan

41.8 NSM



$$3/16" = 1'-0"$$

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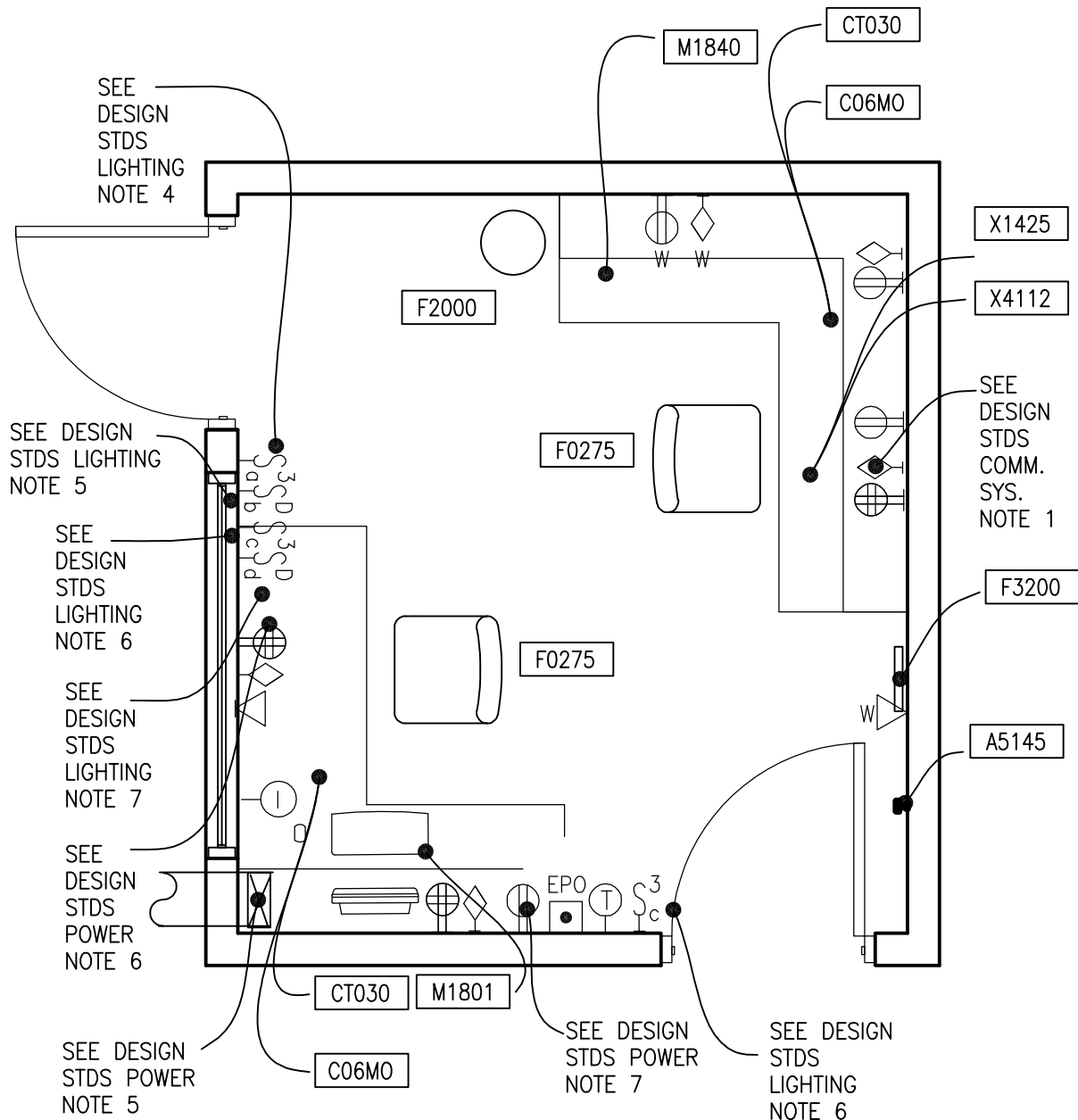


PET/CT Control Room (NMRCR1)

120 NSF

Floor Plan

11.2 NSM



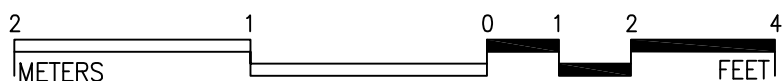
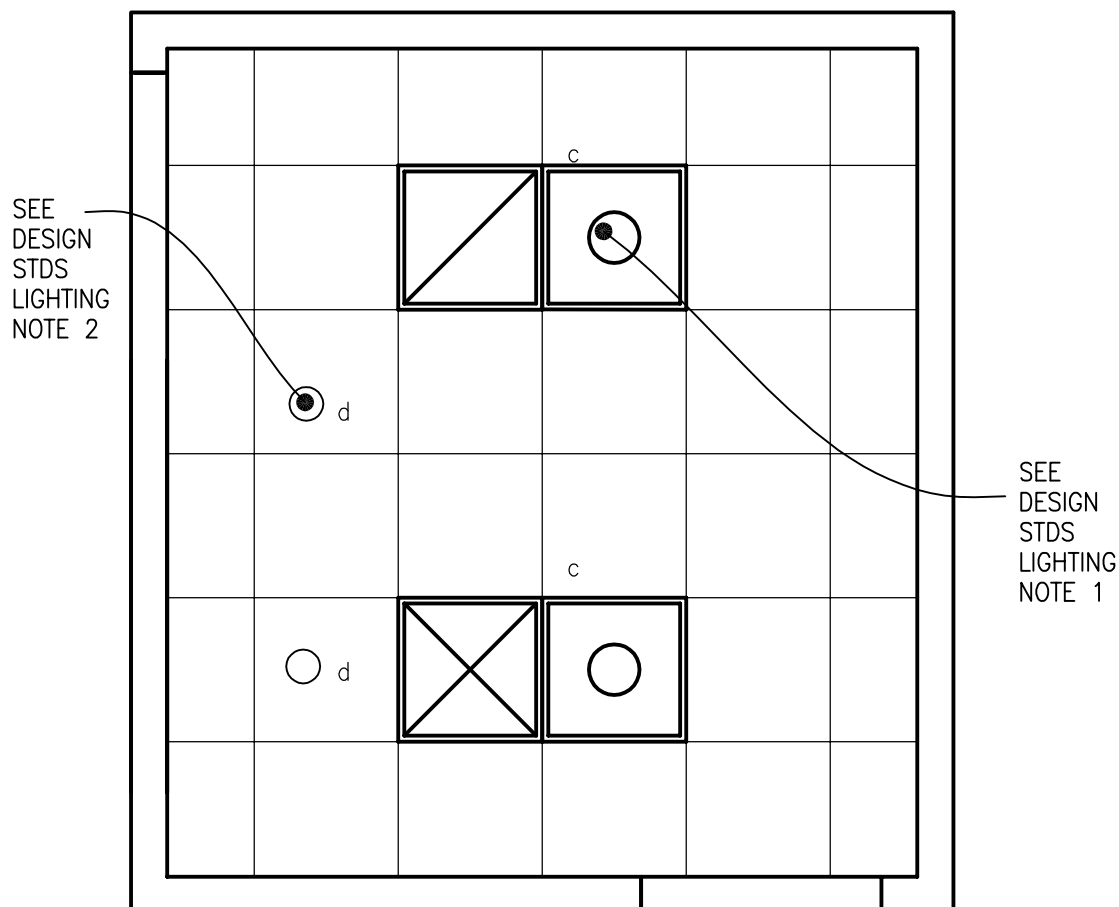
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PET/CT Control Room (NMRCR1)

120 NSF

Reflected Ceiling Plan

11.2 NSM



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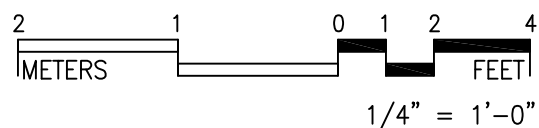
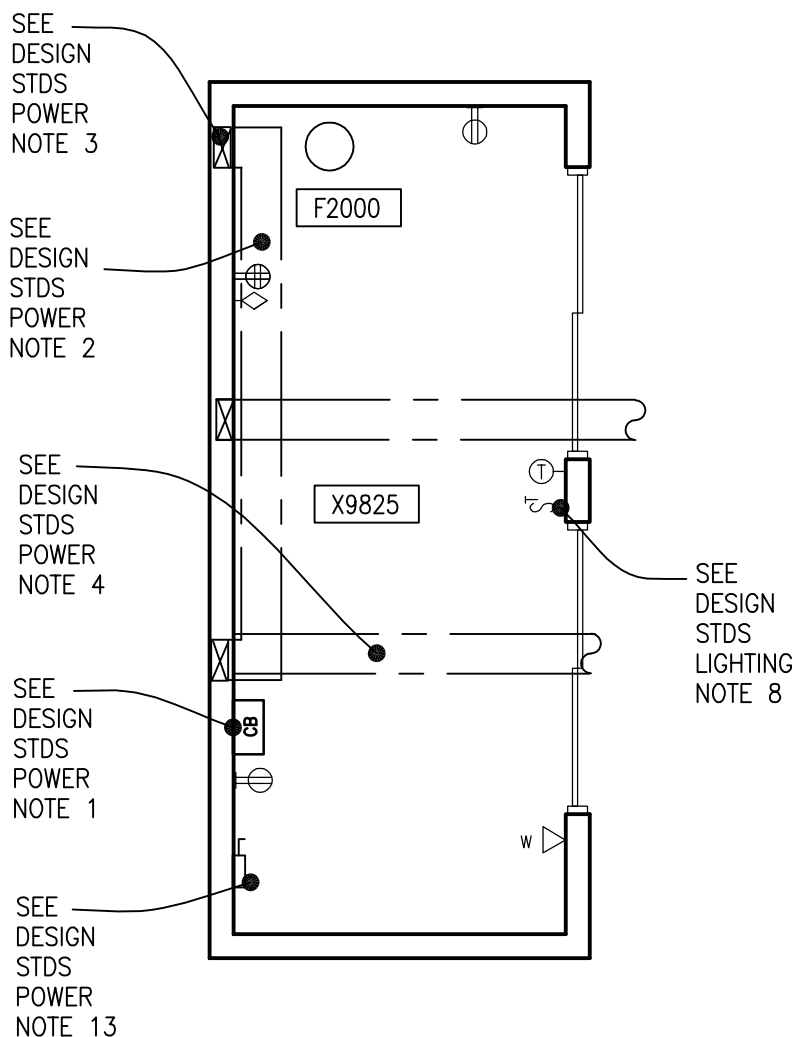


PET/CT System Component Room (XMRC2)

120 NSF

Floor Plan

11.2 NSM



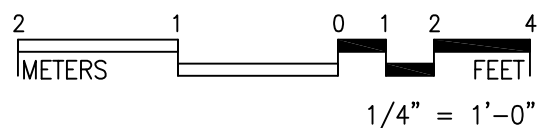
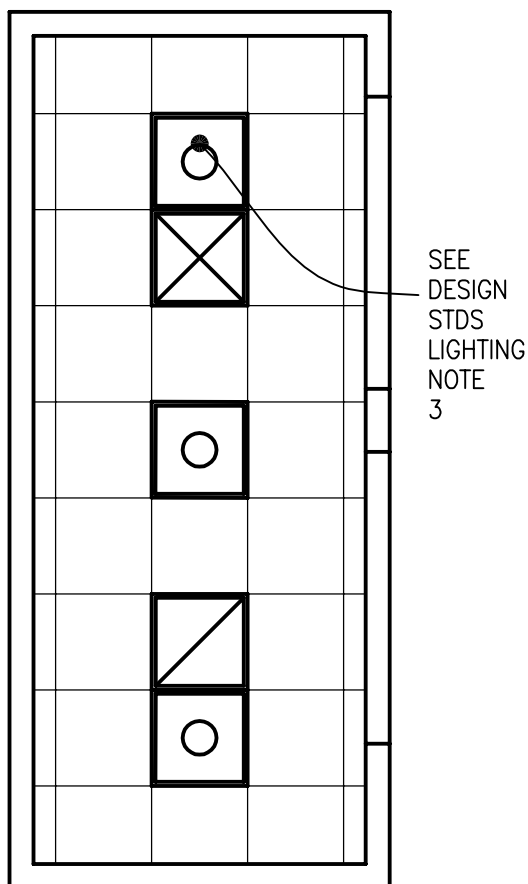
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PET/CT System Component Room (XMRC2)

120 NSF

Reflected Ceiling Plan

11.2 NSM



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PET / CT (XMRC2, NMSS1, & NMRCR1): Design Standards

ARCHITECTURAL

Ceiling:	Acoustical Tile Ceiling
Ceiling Height:	Coordinate with Equip. Manufacturer
Wall Finish:	Paint
Wainscot:	--
Base:	Integral Cove Base
Floor Finish:	Welded Seam Sheet
Sound Protection:	Yes

Notes:

1. Provide a 4'-0" wide shielded door into the PET / CT Scanning Room.
2. Provide a shielded viewing window from PET / CT Control Room to the PET / CT Scanning Room.

LIGHTING

PET-CT Room

General: Fluorescent lights will provide higher illumination level up to 50 FC during patient transfer on and from the table, equipment setting, room cleaning, and equipment maintenance.

Special: Incandescent luminaires controlled by dimmer will provide lower illumination levels down to 5 FC during scanning. Luminaires shall be located to avoid direct glare for patient comfort.

Control Room

General: Fluorescent lights will provide higher illumination level up to 30 FC for room cleaning, and equipment maintenance.

Special: Incandescent luminaires controlled by dimmer will provide lower illumination levels down to 5 FC during scanning for monitor viewing.

Equipment Room

General: Fluorescent lights will provide illumination level up to 50 FC for equipment maintenance.

Notes:

1. 2'x2' fluorescent recessed luminaire, acrylic prismatic lens, with (2) FB031T8-U lamps, 4,100 K, CRI=85 (minimum).
2. 8-inch dia., recessed incandescent downlight, with recessed Fresnel lens, and 150W/A21 inc. horizontally mounted lamp.
3. 2'x2' fluorescent recessed luminaire, acrylic prismatic lens, with (3) FB031T8-U lamps, 4,100 K, CRI=85 (minimum).
4. 3-way switch for PET CT Room fluorescent lighting control; located at entrance door and in control area
5. Dimmer for PET CT Room incandescent downlights control; located in control area.
6. Switch for Control Room fluorescent lighting control
7. Dimmer for Control Room incandescent downlights control.
8. Timer Switch for Equipment Room fluorescent lighting control

POWER

General: The electrical power as shown is to be used as a guide only. Equipment locations, dimensions and wiring requirements should be per the CT system suppliers' equipment drawings. Electrical trades should provide necessary conduits, openings, bushings, nipples, flexible conduits, surface, recessed, wall mounted and floor raceways, etc., as required at the various junction boxes, duct and conduit terminations to allow proper connections of the x-ray equipment and related accessories.

Emergency: Emergency power for CT equipment, controls, and selected receptacles as determined by the Hospital

Notes:

1. 480V, 3P-150A circuit breaker, with adjustable trip, shunt trip, flush mounted. Run empty 50 mm (2" C) from circuit breaker to the floor duct.

2. 12" W x 3-1/2" D multi-compartment flush floor duct with screw-on cover. Connect to vertical wall duct.
3. 10" W x 3-1/2" D multi-compartment flush vertical wall duct with screw-on cover. Connect to CT floor duct and horizontal wall duct.
4. 10" W x 3-1/2" D multi-compartment duct above ceiling with screw-on cover. Connect to vertical duct.
5. 4-3/4" W x 3-1/2" D multi-compartment flush vertical wall duct with screw-on cover. Connect to ceiling duct and horizontal wall duct.
6. 4-3/4" W x 3-1/2" D multi-compartment surface wall duct with screw-on cover. Connect to vertical wall duct.
7. Emergency Power Off pushbutton station. Refer to specific radiology equipment requirements for EPO. Connect to shunt trip at main disconnect.
8. Door switch with NO/NC contacts. Connect to CT system control circuit. CT should shut-off upon opening of the entrance door.
9. Magnetic door interlock with CT controller to prevent interruption of scanning procedure (optional).
10. Warning light with wording "X-RAY IN USE, DO NOT ENTER". Provide interface with CT controller via interface relay.
11. CT warning light interface relay with low voltage power supply to match CT equipment requirements.
12. Power connection above ceiling to modular ceiling service column.
13. 480V, 3P-30A fused disconnect switch for equipment room air conditioning unit.

COMMUNICATION/SPECIAL SYSTEMS

ADP:	Yes
Data:	Yes
Telephone:	Yes
Intercom:	Yes
Nurse Call:	Yes
Public Address:	--
Radio/Entertainment:	--
MATV:	--
CCTV:	--
MID:	--
Security/Duress:	--
VTEL:	--
VA Satellite TV:	--

Notes:

1. 4-port telecommunication outlet per PACS station
2. Junction box above ceiling for data connection to modular ceiling service column.

HEATING, VENTILATING AND AIR CONDITIONING

Inside Design Conditions:

70°F to 75°F (21°C to 24°C)

35% to 60% Relative Humidity

Minimum Air Changes per Hour:

- Supply Air

6 for PET/CT Scanning Room

6 for PET/CT Control Room

2 for PET/CT System Component Room

100% Exhaust: PET/CT Scanning Room

100% Outside Air: No

Room Air Balance:

Negative for PET/CT Scanning Room

Positive for Control Room and

System Component Room

Dedicated Exhaust System: No

Occupancy:

3 for PET/CT Scanning Room

2 for other rooms

AC Load-Equipment:

26,000 Btuh (7,750 W) for PET/CT

Scanning Room

4,500 Btuh (1,350 W) for PET/CT

Control Room

13,500 Btuh (4,000 W) for PET/CT

System Component Room

AC Load-Lighting:

1.3 W/SF (14 W/M²) in PET/CT

Scanning Room

1.6 W/SF (17 W/M²) in PET/CT

Control Room
1.6 W/SF (17 W/M²) in PET/CT
System Component Room

Notes:

1. Verify cooling loads and other specific requirements with the equipment manufacturer on a specific project.
2. Provide dedicated AC unit to serve the PET/CT System Component Room.

PLUMBING AND MEDICAL GASES

Cold Water:	Yes
Hot Water:	Yes
Laboratory Air:	--
Laboratory Vacuum:	--
Sanitary Drain:	Yes
Reagent grade Water:	--
Medical Air:	Yes
Medical Vacuum:	Yes
Oxygen:	Yes
Notes:	

PET / CT (XMRC2, NMSS1, & NMRCR1): Equipment Guide List

1. PET / CT SCANNING ROOM (NMSS1)					
JSN	NAME	QTY	ACQ / INS	DESCRIPTION	SPEC
A1010	Telecommunication Outlet	1	CC	Telecommunication outlet location.	27 31 00
A1012	Telephone, Wall Mounted, 1 Line	1	CC	Telephone, wall mounted, 1 line.	27 31 00
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.	
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels. For general purpose use throughout the facility.	10 28 00
A5106	Waste Disposal Unit, Sharps w/Glove Dispenser	1	VV	The unit is designed for the disposal of sharps and complies with OSHA guidelines for the handling of sharps. It shall house a 5 quart container and be capable of being mounted on a wall. It shall have a glove dispenser attached. The unit shall be secured by a locked enclosure.	
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate. For general purpose use throughout the facility to hang various items of apparel.	10 28 00
A6210	Uninterruptible Power Supply, Single Phase	2	VV	Stand alone uninterruptible power supply (UPS) available in 120, 208 or 240 VAC configuration. Power output can range from 200 VA to 3000 VA depending on the application. Used in areas where power protection is required for computer systems, communication equipment, etc. The UPS is used to keep the equipment on line or safely turn the equipment off in the event of a power loss.	

C03F0	Cabinet, U/C/B, 1 Shelf, 2 Half DR, 2 DO, 36x30x22	2	CC	Standing height under counter base cabinet with an adjustable shelf and two half width drawers above solid hinged doors. Also referred to as a combination cabinet or a drawer and cupboard cabinet. For general purpose use throughout the facility.	12 32 00
C03P0	Cabinet, Sink, U/C/B, 2 Door, 30" W	1	CC	Standing height under counter base sink cabinet. 36" H x 30" W x 22" D with two solid hinged doors. Also referred to as a double-door sink cabinet. For general purpose use throughout the facility where a sink is to be used. Coordinate actual clear cabinet dimension with the actual outside dimension of sink that is specified to ensure that they are compatible.	12 32 00
CE030	Cabinet, W/H, 2 SH, 2 GDO, Sloping Top, 38x30x13	1	CC	Wall hung cabinet with two adjustable shelves, framed-glass hinged doors, and sloping top. Also referred to as a framed-glass hinged double door wall case. For general purpose use throughout the facility.	12 32 00
CS090	Sink, SS, Single Compartment, 7.5x19x16 ID	1	CC	Single compartment stainless steel sink, drop-in, self-rimming, ledge-type, connected with a drain and provided with a mixing faucet. It shall also be provided with pre-punched fixture holes on 4" center, integral back ledge to accommodate deck-mounted fixtures, brushed/polished interior and top surfaces, and sound deadened. Recommended for use in suspended or U/C/B sink cabinets having a high plastic laminate or Chemsurf laminate countertop/work surface. Coordinate actual outside sink dimensions with the actual clear dimension of cabinet specified to ensure that they are compatible. For general purpose use throughout the facility.	22 40 00

CT030	Countertop, High Pressure Laminate	AR	CC	High pressure laminate countertop (composition of wood particle core with plastic laminate surface) having a hard smooth surface finish, standard thickness of 1", and a 4" butt backsplash/curb. Also referred to as a work surface or work top. Available in a wide choice of colors, patterns, and depths. Used in general purpose areas requiring a basic work surface arrangement with limited heat resistance and poor chemical resistance. Pricing based upon a 24" depth.	12 36 00
E0222	Worksurface, Computer, O/H Cab, Wall Mtd, 48" W	1	VV	THIS TYPICAL INCLUDES: 3 Vertical Hanging Strips 2 Lockable Flipper Units 2 Shelves, Storage/Display 2 Lights 1 Cantilevered Work Surface 4 Storage Frames 4 Drawers, 3"H (76mm) 6 Drawers, 6"H (152mm)	
E0912	Locker, Supply, Med Surg, Wall Mtd	1	VV	Medical/Surgical Supply locker, Wall Mounted, Approx 23"W x20"D. THIS TYPICAL INCLUDES: 1 Wall Mounted Rail 1 Locked Storage Container 4 Tray/Shelves 5 Drawers, 3"H (76mm) 2 Drawers, 6"H (152mm) 2 Tray/Shelf Dividers Drawer Organizer Bins Consider the need for an E0921 to transport the locker from place to place.	



E0915	Locker, Supply, Medication, Wall Mtd, 23"W x 20"D	1	VV	<p>THIS TYPICAL INCLUDES:</p> <ul style="list-style-type: none"> 1 Wall Mounted Rail 1 Locked Storage Container 2 Tray/Shelves 1 Locker Drawer w/Locked Lid, 6"H (152mm) 5 Drawers, 3"H (76mm) 3 Drawers, 6"H (152mm) 2 Tray/Shelves Divider Drawer Organizer Bins <p>Consider the need for an E0921 to transport the locker from place to place.</p>	
E1500	Rail, MOD, W/MNTD, HX144XD	1	VV	Wall mounted rail used for hanging (mounting) lockers, shelves drawers on a wall.	
F0275	Chair, Swivel, High Back	2	VV	Highback contemporary swivel chair, 41" high X 23" wide X 23" deep with five (5) caster swivel base and arms. Chair may be used at desks or in conference rooms. Back and seat are foam padded and upholstered with either woven textile fabric or vinyl.	
F0340	Stool, Self Adjusting	1	VV	Self adjusting stool. Consists of a foam padded upholstered seat with attached foot rest for added comfort. Mounted on swivel casters. Designed for doctor's use during examinations.	
F0355	Footstool, Straight	1	VV	Step stool. Used to assist patients getting on and off exam or surgical tables. Fitted with electrically conductive rubber tips.	
F2000	Basket, Wastepaper, Round, Metal	1	VV	Round wastepaper basket, approximately 18" high X 16" diameter. This metal unit is used to collect and temporarily store small quantities of paper refuse in patient rooms, administrative areas and nursing stations.	

F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).	
M0750	Flowmeter, Air, Connect w/50 PSI Supply	1	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Requires the appropriate adapter for connection to the wall outlet and fitting to connect to tubing. Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.	
M0755	Flowmeter, Oxygen, Low Flow	1	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Database pricing includes DISS fitting and DISS power outlet and wall adapter. Other fitting and adapter configurations are available.	
M0765	Regulator, Vacuum	1	VV	An air/oxygen mixer is designed to accurately control a pressurized gas mixing with an oxygen concentration. Unit contains audible alarms to warn of supply failure, an auxiliary outlet and a oxygen concentration control adjustment range from 21% to 100%. The unit can also be used to supply an accurate pre-mixed gas source to respiration or ventilator units. A specific application may require an additional air inlet filter/water trap.	
M1801	Computer, Microprocessing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers. The system shall have the following minimum characteristics: a 2.8 GHz Pentium processor; 512 MB memory; 80GB hard drive; 32/48x CD-ROM/DVD combo; a 3.5" floppy drive; 1.44MB network interface card; video 32 MB NVIDIA; a 15 inch flat panel color monitor. The computer is used throughout the facility to input, manipulate and retrieve information.	

M2055	Shelving, Storage, Wire, CRS, w/Adjustable Shelves	1	VV	Stationary, wire, shelving unit. Unit has fully adjustable shelves constructed of stainless steel. For use in general purpose storage areas. Shelving is provided in various sizes and configurations. Price provided is for a unit approximately 74"H x 18"D x 48"W with four shelves.	
M3070	Hamper, Linen, Mobile, w/Lid	1	VV	Mobile linen hamper with hand or foot operated lid. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Holds 25" hamper bags. Mounted on ball bearing casters. For linen transport in hospitals and clinics.	
M3072	Frame, Infectious Waste Bag w/Lid	1	VV	Frame for an infectious waste collection bag. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Adjust to hold 18" or 25" trash bags. Mounted on ball bearing casters and includes permanently mounted hinged lid. Provides means of bagging infectious waste at point of waste generation.	
M4116	Monitor, Vital Signs	1	VV	Electronic sphygmomanometer. LCD displays non-invasive blood pressure, pulse rate and temperature. Used in hospitals and clinics. Includes an optional mobile stand.	

M4250	Pump, Syringe, Infusion	1	VV	The infusion syringe pump ensures highly accurate volume delivery and consistent flow for small volumes (<50 ml) of pharmacologic agents or thick feeding solutions. It shall be small, lightweight construction, making it transportable. Shall have menu-driven programming capable of flow rates (e.g. 0.1 or 1.0 mL/hr) that are intended for long-term bedside use and/or critical care patient transport, plunger positioning sensor, LCD display for easy viewing, volume limit programming to serve as a convenient cue of volume or dose delivery completion and multiple delivery modes for all applications requiring precisely controlled infusion rates. The infusion pump shall have automatic syringe size sensing which will give the flexibility to accept a wide range of syringe sizes (up to 60 mL) from different manufacturers. Shall be battery powered/AC adapter.	
M4255	Stand, IV, Adjustable	1	VV	Adjustable IV stand with 4-hook arrangement. Stand has stainless steel construction with heavy weight base. It adjusts from 66 inches to 100 inches and is mounted on conductive rubber, ball bearing, swivel casters. Stand is used for administering intravenous solutions.	
M4266	Pump, Volumetric, Infusion, Multiple Line	1	VV	Volumetric infusion pump. Pump is self-regulating with automatic sensor and adjustable rate. Equipped with visual and audible alarms and up to 10 hour capacity battery. For the administration of a wide variety of therapeutic agents where precise control is required. Unit provides individual control to IV lines simultaneously.	

X9805	Stand, Injection, Nuclear Medicine	1	VV	An injection stand designed for arm positioning for radionuclide injections. The arm rest holds the patient's arm firmly in place. A utility tray sits adjacent to the armrest to hold supplies and includes a lead-lined multi syringe holder. The stand height is adjustable approximately from 29" to 44." Casters allow the stand to be rolled into position or out of the way for storage. It is structurally balanced so that it won't tip over.	
X9825	Nuclear Imaging System (PET/CT)	1	CF	A system that combines the functionality of PET and SPECT with the anatomical landmarks of CT to perform Functional Anatomic Mapping.	

2. CONTROL ROOM (NMRCR1)

JSN	NAME	QTY	ACQ / INS	DESCRIPTION	SPEC
A1010	Telecommunication Outlet	1	CC	Telecommunication outlet location.	27 31 00
A1012	Telephone, Wall Mounted, 1 Line	1	CC	Telephone, wall mounted, 1 line.	27 31 00
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate. For general purpose use throughout the facility to hang various items of apparel.	10 28 00
C0044	Frame, Apron, 1 Drawer, 4x30x22	1	CC	Apron frame with one standard drawer. Also referred to as a drawer frame or table frame. Used for a knee space as a combination frame and drawer to support a top between base cabinets or a base cabinet and a wall.	12 32 00
C0045	Frame, Apron, 1 Drawer, 4x36x22	2	CC	Apron frame with one standard drawer. Also referred to as a drawer frame or table frame. Used for a knee space as a combination frame and drawer to support a top between base cabinets or a base cabinet and a wall.	12 32 00
C06M0	Cabinet, U/C/B, 1 PBD, 2 DR, 1 File DR, 30x18x22	3	CC	Cabinet, U/C/B, 1 PBD, 2 DR, 1 File DR, 30x18x22	12 32 00

CT030	Countertop, High Pressure Laminate	AR	CC	High pressure laminate countertop (composition of wood particle core with plastic laminate surface) having a hard smooth surface finish, standard thickness of 1", and a 4" butt backsplash/curb. Also referred to as a work surface or work top. Available in a wide choice of colors, patterns, and depths. Used in general purpose areas requiring a basic work surface arrangement with limited heat resistance and poor chemical resistance. Pricing based upon a 24" depth.	12 36 00
F0275	Chair, Swivel, High Back	2	VV	Highback contemporary swivel chair, 41" high X 23" wide X 23" deep with five (5) caster swivel base and arms. Chair may be used at desks or in conference rooms. Back and seat are foam padded and upholstered with either woven textile fabric or vinyl.	
F2000	Basket, Wastepaper, Round, Metal	1	VV	Round wastepaper basket, approximately 18" high X 16" diameter. This metal unit is used to collect and temporarily store small quantities of paper refuse in patient rooms, administrative areas and nursing stations.	
F3050	Whiteboard, Dry Erase	1	CC	Whiteboard unit, approximately 36" H x 48" W consisting of a white porcelain enamel writing surface with an attached chalk tray. Magnetic surface available. Image can be easily removed with a standard chalkboard eraser. For use with water color pens. Unit is ready to hang.	10 11 13
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).	

M1801	Computer, Microprocessing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers. The system shall have the following minimum characteristics: a 2.8 GHz Pentium processor; 512 MB memory; 80GB hard drive; 32/48x CD-ROMDVD combo; a 3.5" floppy drive; 1.44MB network interface card; video 32 MB NVIDIA; a 15 inch flat panel color monitor. The computer is used throughout the facility to input, manipulate and retrieve information.	
M1840	Printer/Copier/Fax Combination	1	VV	Multifunctional printer, fax, scanner and copier (PFC) all-in-one machine.	
X1425	Imager, Laser (1024 X 1024) (Din/PACS)	1	CF	Laser imager. An infrared laser beam is scanned across the film by a precision rotating polygon, while correcting optic focus and controlling the beam's intensity. The characteristics and components include an automatic film handling system and uses 10" X 14" IR film. It can be interfaced to additional imaging modalities with optional interface kit. For use with digital output imaging modalities.	
X4112	Console, PACS, Remote View, 1k X 1k, 2 Monitors	1	CF	Two monitor remote viewing station for picture archiving and retrieval (PACS) system. This station is for use by providers inside or outside of radiology to review images. Station includes local image storage, image manipulation, and simultaneous display of multiple images on two 1024 x 1024 image display CRT's. Images are stored on a resident hard disk and roll off the disk as more recent images are sent to the station. Provider may request images from the PACS. Unit must be connected to the PACS by LAN for image and result receipt. This station is for use in areas like radiologist's offices and the E.R.. where a more comprehensive system is required. Console must be DICOM compliant. Input may be by keyboard, mouse, trackball or voice activated commands.	

X9825	Components of Parent Item: : Nuclear Imaging System for PET/CT: Workstation with LCD Monitors, Injector Control and electronic station, and operator console and computer	1	CF	A system that combines the functionality of PET and SPECT with the anatomical landmarks of CT to perform Functional Anatomic Mapping.	
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3. SYSTEM COMPONENT ROOM (XMRC2)

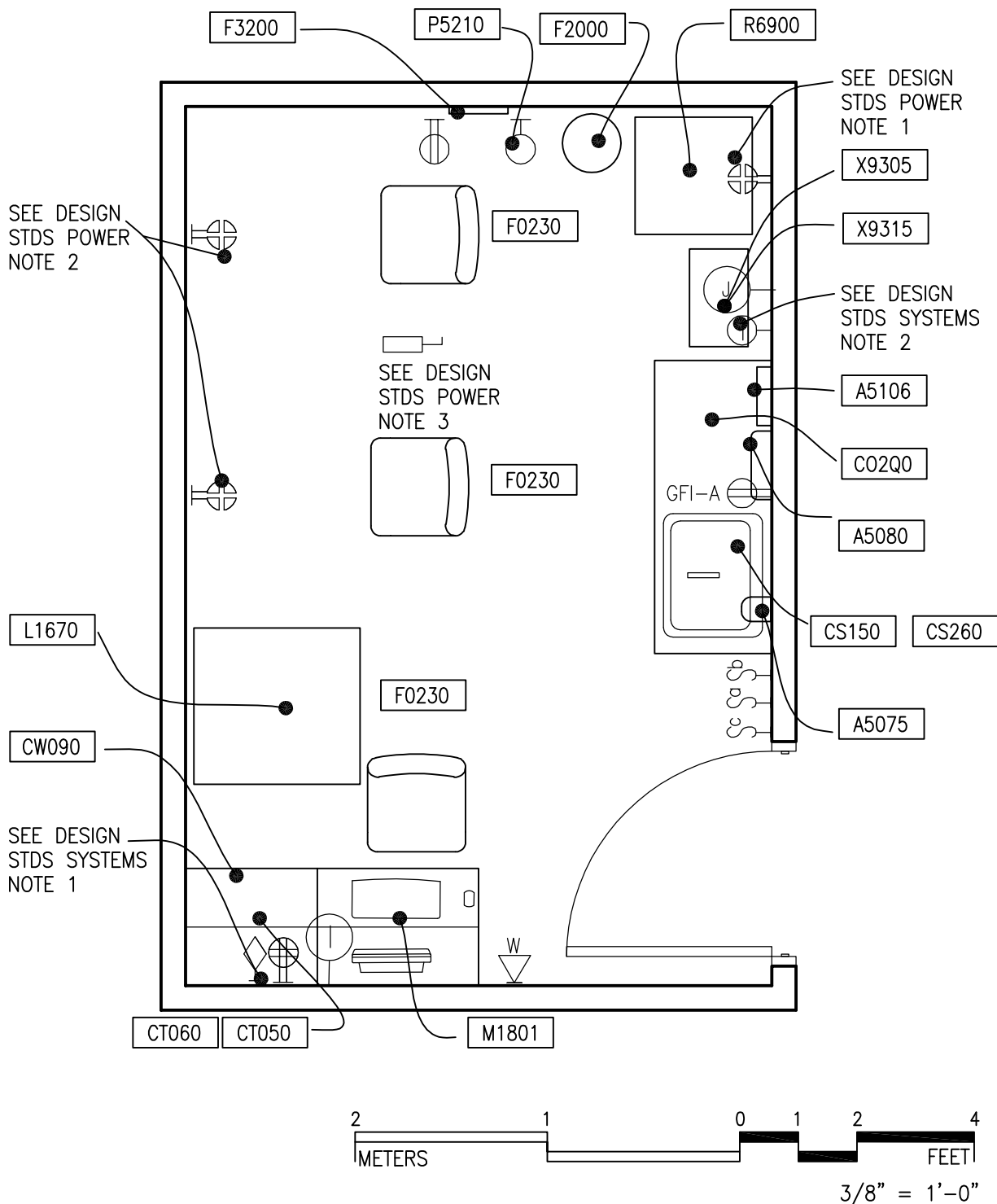
JSN	NAME	QTY	ACQ / INS	DESCRIPTION	SPEC
A1010	Telecommunication Outlet	AR	CC	Telecommunication outlet location.	27 31 00
A1012	Telephone, Wall Mounted, 1 Line	1	CC	Telephone, wall mounted, 1 line.	27 31 00
F2000	Basket, Wastepaper, Round, Metal	1	VV	Round wastepaper basket, approximately 18" high X 16" diameter. This metal unit is used to collect and temporarily store small quantities of paper refuse in patient rooms, administrative areas and nursing stations.	
X9825	Components of Equipment for Nuclear Imaging System for PET/CT	1	CF	May include (depending on type of equipment):	
				Electronics	
				Step down transformer	
-				Water Chiller	
				Generator	
				System component cabinets	
				Electronics cabinet	
				Computer room air conditioning	
				Floor duct, wall mounted horizontal raceway, Vertical raceway,	
				Electrical Power panel	

Radiopharmacy (NMRP1)

150 NSF

Floor Plan

14.0 NSM



Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

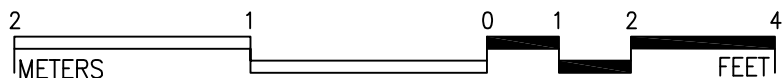
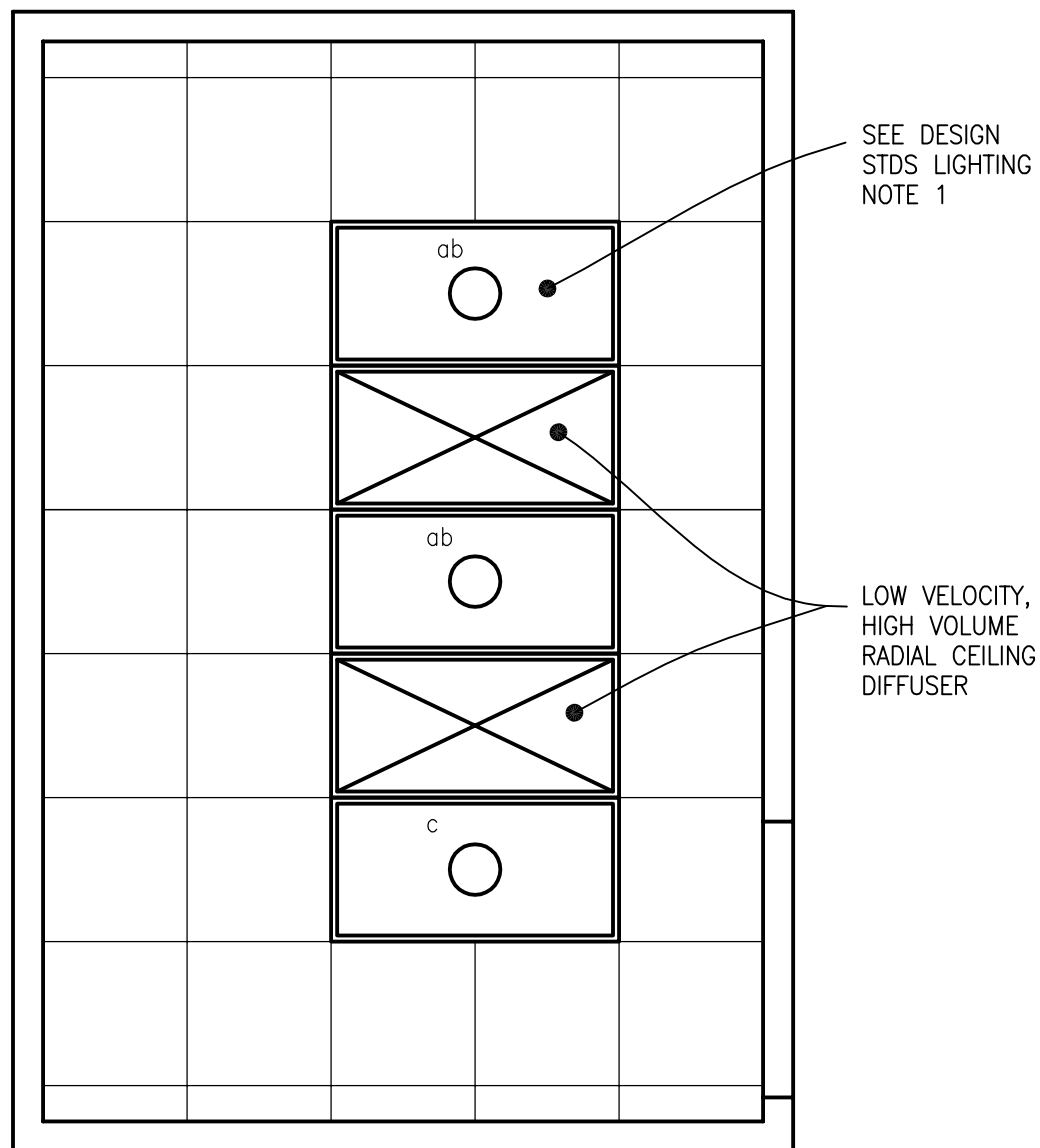


Radiopharmacy (NMRP1)

150 NSF

Reflected Ceiling Plan

14.0 NSM



$$3/8" = 1'-0"$$

The locations and quantities of the air outlets and inlets are tentative and may not represent the optimum design solution(s) envisioned by the designer, who shall study the layout, calculate air volumes, and may alter the arrangement shown in the reflected ceiling plan, as required, to produce a project-specific air distribution system design.

Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

RADIOPHARMACY (NMRP1): Design Standards

ARCHITECTURAL

Ceiling:	Acoustical Tile Ceiling
Ceiling Height:	8'-0"
Wall Finish:	Paint
Wainscot:	--
Base:	Integral Cove Base
Floor Finish:	Welded Seam Sheet
Sound Protection:	Yes

Notes:

1. Room shielding may be required depending upon the complexity of program.

LIGHTING

General: Fluorescent lights will provide illumination level up to 70 FC.

Special: Dual switching for multi-level illumination.

Notes:

1. 2'x4' fluorescent recessed luminaire, acrylic prismatic lens, with (4) F32T8 lamps, 3500-deg K, two ballasts.

POWER

General: The electrical power as shown is to be used as a guide only. Equipment locations, dimensions and wiring should be per the radiopharmacy equipment requirements.

Emergency: Emergency power for the equipment, controls, and selected receptacles as determined by the Hospital.

Notes:

1. Refrigerator outlet on emergency power
2. Bio-safety cabinet outlet on emergency power
3. Connection to exhaust fan on roof on emergency power

COMMUNICATION/SPECIAL SYSTEMS

ADP:	Yes
Data:	Yes
Telephone:	Yes

Intercom:	Yes
Nurse Call:	--
Public Address:	--
Radio/Entertainment:	--
MATV:	--
CCTV:	--
MID:	--
Security/Duress:	Yes
VTEL:	--
VA Satellite TV:	--

Notes:

1. 4-port telecommunication outlet for PACS station
2. Junction box for safe security monitoring device connection.

HEATING, VENTILATING AND AIR CONDITIONING

Inside Design Conditions:

70 °F to 75 °F (21 °C to 24 °C)

30% to 60% Relative Humidity

Minimum Air Changes per Hour:

-Supply Air

As required to meet hood exhaust

100% Exhaust: Yes

100% Outside Air: No

Room Air Balance: Negative

Dedicated Exhaust System: Yes

Occupancy: 3

AC Load – Equipment:

3,000 Btuh – 6,500 Btuh

(900 W – 1,800 W)

AC Load Lighting: 1.2 W/SF (12 W/M²)

Notes:

1. Verify cooling loads and other specific requirements with the equipment manufacturer on a specific project.
2. Provide dedicated fume hood exhaust system (Type H3 or H7 hood, refer to VA HVAC Design Manual)

PLUMBING AND MEDICAL GASES

Cold Water:	Yes
Hot Water:	Yes
Laboratory Air:	Yes
Laboratory Vacuum:	Yes

Sanitary Drain: Yes
Reagent grade Water: Verify with the Medical Center
Medical Air: --
Medical Vacuum: --
Oxygen: --

Notes:

1. Provide natural gas if fume hood will be used.
2. Sanitary waste and vent piping from radiopharmacy shall be chemical resistant type, as appropriate.
3. Eyewash equipment shall comply with ANSI Z358.1. Provide tepid water to the unit.

RADIOPHARMACY (NMRP1): Equipment Guide List

JSN	NAME	QTY	ACQ / INS	DESCRIPTION	SPEC
A1010	Telecommunication Outlet	1	CC	Telecommunication outlet location.	27 31 00
A1012	Telephone, Wall Mounted, 1 Line	1	CC	Telephone, wall mounted, 1 line.	27 31 00
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.	
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels. For general purpose use throughout the facility.	10 28 00
A5106	Waste Disposal Unit, Sharps w/Glove Dispenser	1	VV	The unit is designed for the disposal of sharps and complies with OSHA guidelines for the handling of sharps. It shall house a 5 quart container and be capable of being mounted on a wall. It shall have a glove dispenser attached. The unit shall be secured by a locked enclosure.	
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate. For general purpose use throughout the facility to hang various items of apparel.	10 28 00
C0036	Rail, Apron, 4x30x1	4	CC	Apron rail. Also referred to as an apron front, apron panel, or knee space rail. Used to close in front knee space area and/or provide work surface support between two base cabinets or a base cabinet and wall. Apron rails should be ordered in pairs to provide both front and rear work surface support.	12 32 00
C0039	Rail, Apron, 4x48x1	2	CC	Apron rail. Also referred to as an apron front, apron panel, or knee space rail. Used to close in front knee space area and/or provide work surface support between two base cabinets or a base cabinet and wall. Apron rails should be ordered in pairs to provide both front and rear work surface support.	12 32 00

C0041	Rail, Apron, 4x60x1	4	CC	Apron rail. Also referred to as an apron front, apron panel, or knee space rail. Used to close in front knee space area and/or provide work surface support between two base cabinets or a base cabinet and wall. Apron rails should be ordered in pairs to provide both front and rear work surface support.	12 32 00
C02Q0	Cabinet, Sink, U/C/B, 1 Door, 36x24x22	1	CC	Standing height under counter base sink cabinet with a solid right or left-hinged door (appropriate door configuration to be indicated on equipment elevation drawings). Also referred to as a single-door sink cabinet. For general purpose use throughout the facility where a sink is to be used. Coordinate actual clear cabinet dimension with the actual outside dimension of sink that is specified to ensure that they are compatible.	12 32 00
CS260	Sink, Epoxy Resin, 10x25x15 ID (Note: may use corrosion resistant stainless steel if user desires)	1	CC	One-piece cast epoxy resin sink (composition of molded epoxy resins and inert materials) connected with a drain and provided with a mixing faucet. For use in suspended or U/C/B sink cabinets and mounted under the epoxy resin countertops/work surfaces found in lab areas requiring optimum physical chemical resisting properties. For general purpose use in a lab area.	22 40 00
	OR				
CS150	Sink, SS, Single Compartment, 10x19x16 ID	1	CC	Single compartment stainless steel sink, drop-in, self-rimming, ledge-type, connected with a drain and provided with a mixing faucet. It shall also be provided with pre-punched fixture holes on 4" center, integral back ledge to accommodate deck-mounted fixtures, brushed/polished interior and top surfaces, and sound deadened. Recommended for use in suspended or U/C/B sink cabinets having a high plastic laminate or Chemsurf laminate countertop/work surface. Coordinate actual outside sink dimensions with the actual clear dimension of cabinet specified to ensure that they are compatible. For general purpose use throughout the facility.	22 40 00

CT060	Countertop, Modified Epoxy Resin (Note: may use corrosion resistant stainless steel if user desires)	1	CC	Modified epoxy resin countertop (composition of molded epoxy resins and inert materials) having a low sheen surface finish, standard thickness of 1", and a 4" butt backsplash/curb. Also referred to as a work surface or work top. Available in a choice of colors and depths. Used in lab areas requiring optimum physical and chemical resisting properties.	12 36 00
	OR				
CT050	Countertop, Stainless Steel	1	CC	Stainless steel countertop (composition of heavy-gauge Type No. 304 stainless steel) having a smooth satin finish and integral 4" backsplash/curb. Also referred to as a corrosion-resistant steel work surface or work top. Available in various depths. Used in areas where excellent ease of cleaning, abrasion resistance, bacteria resistance, impact resistance, load capacity and moisture resistance, are of concern. Pricing based upon a 24" depth.	12 36 00
CW090	Cabinet, Floor Standing, 5 SH, 2 GDO, ST, 95"x36"	2	CC	Floor standing storage cabinet approximately 95" H x 36" W x 16" D with five adjustable shelves, framed glass hinged doors, and sloping top. Also referred to as a framed glass hinged double door case. For general purpose use throughout the facility.	12 32 00
F0230	Chair, Drafting, Rotary	3	VV	Drafting chair approximately 47" high X 20" wide X 20" deep with rotary stool and a 5 (five) star base with casters. Padded seat and back. Foot ring adjusts with chair.	
F0340	Stool, Self Adjusting	1	VV	Self adjusting stool. Consists of a foam padded upholstered seat with attached foot rest for added comfort. Mounted on swivel casters. Designed for doctor's use during examinations.	
F2000	Basket, Wastepaper, Round, Metal	1	VV	Round wastepaper basket, approximately 18" high X 16" diameter. This metal unit is used to collect and temporarily store small quantities of paper refuse in patient rooms, administrative areas and nursing stations.	
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).	

L1670	Centrifuge, Refrigerated, Floor Model	1	VV	Refrigerated centrifuge. This is a floor standing unit with a solid state speed control system that has speeds ranging from 150 to 6000 RPM. Other characteristics include a temperature range of -9 to +39 degrees C., dual range digital timer, rotor imbalance detection, a programmable memory and a dynamic brake with three deceleration rates. The unit also has a refrigeration system that consists of a low maintenance compressor and a coil wrapped insulated guard bowl. Used in laboratories for processing heat sensitive samples.	
M1801	Computer, Microprocessing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers. The system shall have the following minimum characteristics: a 2.8 GHz Pentium processor; 512 MB memory; 80GB hard drive; 32/48x CD-ROMDVD combo; a 3.5" floppy drive; 1.44MB network interface card; video 32 MB NVIDIA; a 15 inch flat panel color monitor. The computer is used throughout the facility to input, manipulate and retrieve information.	
P2450	Valve, Mixing, Thermostatic	1	CC	Thermostatic mixing valve with washout hose. Used with portable whirlpool equipment. Thermostatic valve is used to maintain temperature between 70 and 110 degree Fahrenheit, with a flow rate of 20 gallons a minute. The washout hose assembly used to wash out tanks after treatment. Used in physical therapy department to provide comfortable water temperature for patient treatments.	22 40 00
P5210	Shower, Safety, Freestanding, With Eye/Face Wash	1	CC	Deluge safety shower. This is a complete, maximum protection safety station consisting of a free-standing emergency shower and an eye/face wash fixture. Used anywhere exposure to hazardous substances may occur.	22 40 00

R6900	Refrigerator, Bio, Radio/Pharm, Approx. 5 CuFt	1	VV	Radiopharmaceutical and biological refrigerator with key-lock door. This unit is lead-lined with 1/8 inch lead on all sides for radiopharmaceuticals, biologicals and other radioactive materials. Freezer compartment and refrigerator eliminates thermal lag placement of cooling units inside the shielding. This unit is used as a storage unit in hospitals and laboratories that handle radioactive materials.	
X9305	Cabinet, Storage, Lead Lined	1	VV	Lead lined storage cabinet. This unit is constructed of rigid steel walls with a 1/16" lead liner between each wall. The lead liner is formed into the cover so that when closed, positive x-ray protection is assured. Designed to hold cassettes up to the 14" X 17" size. This unit is used in nuclear medicine and radioisotope lab.	
	or use the following at the users preference				
X9315	Safe, Storage, Radium	1	VV	Radium storage safe. The unit assures optimum shielding against exposure to radioisotopes . It is made of steel (CRS) with lead lining, has a door key-lock and is fire-proof.	

